

800MHz POWER MAC G4 DP

Reviewed: Apple's New Two-Processor Powerhouse, p. 30

11.2001

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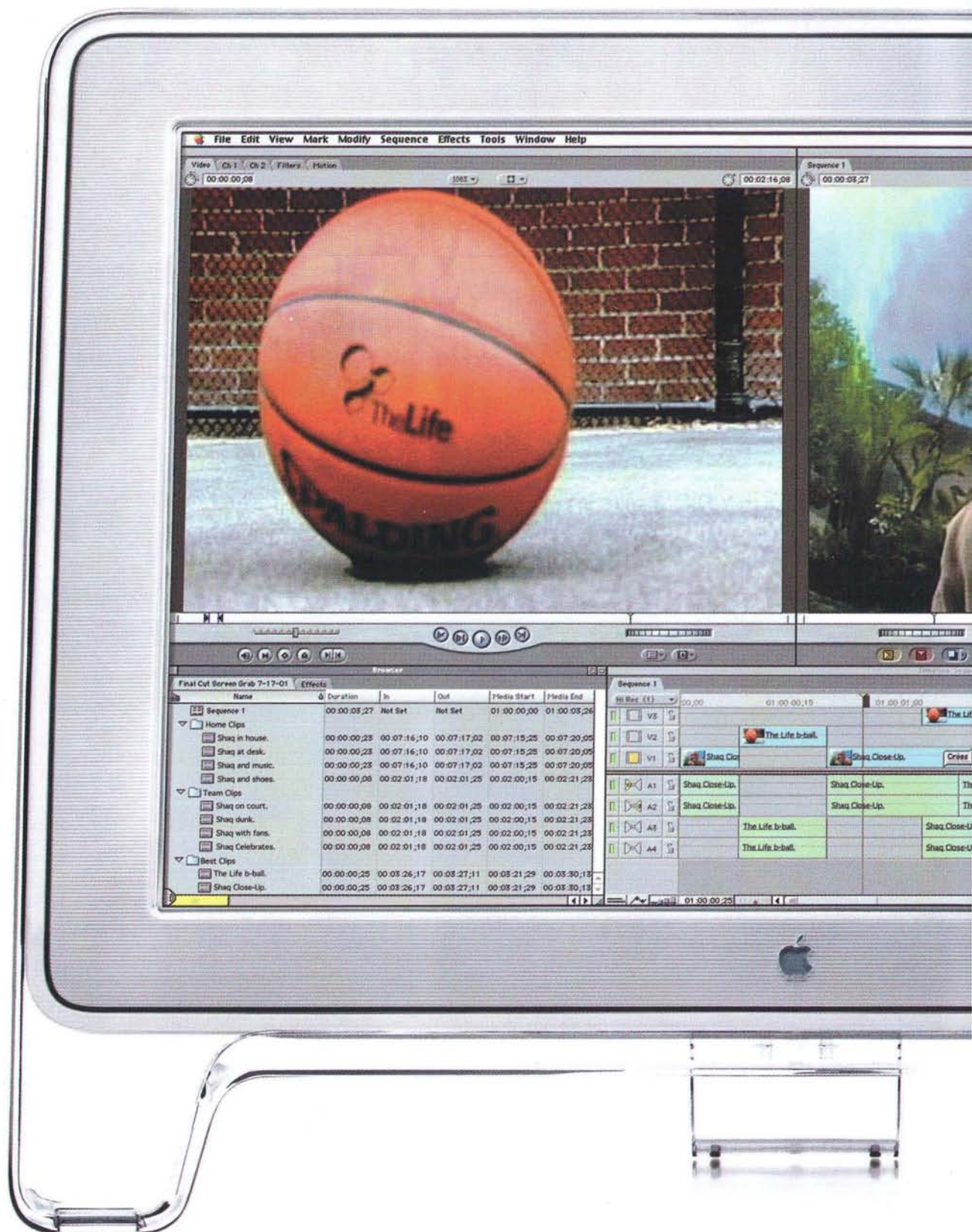
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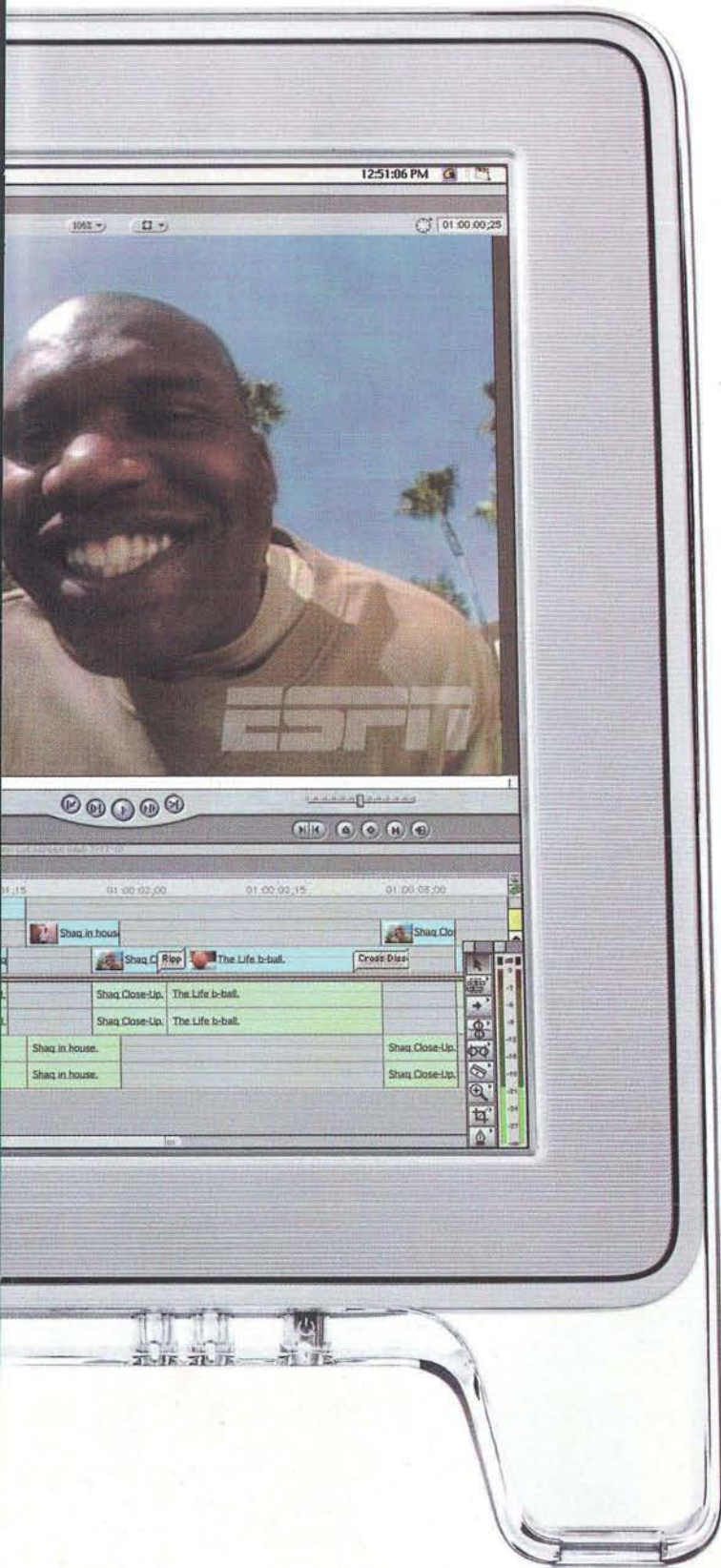
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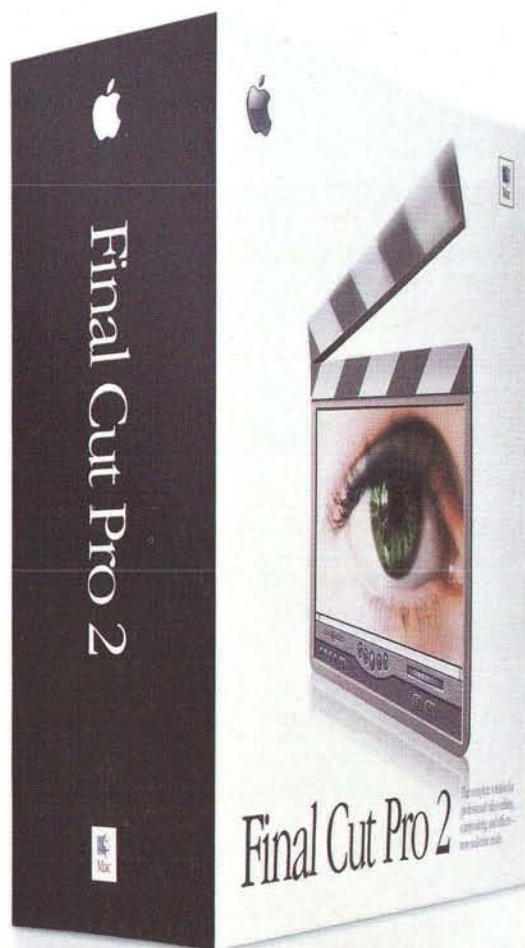
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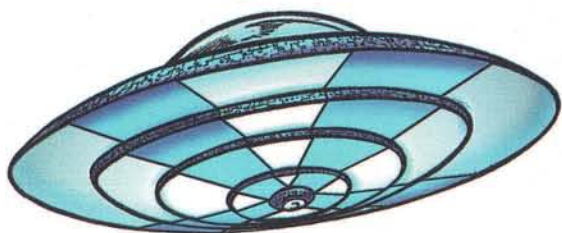
Macworld's Ultimate Buyers' Guide: Digital Cameras

DEKE MCCLELLAND As the holidays near, many Mac users' thoughts turn to digital photography. After all, nothing beats a digital camera when you want to record a festive gathering or please a gadget-loving spouse. This complete guide demystifies the digital camera's many features, so you can choose the one-, two-, or three-megapixel camera that's right for you.

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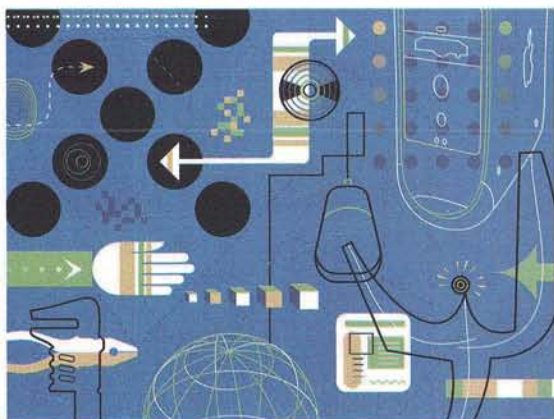
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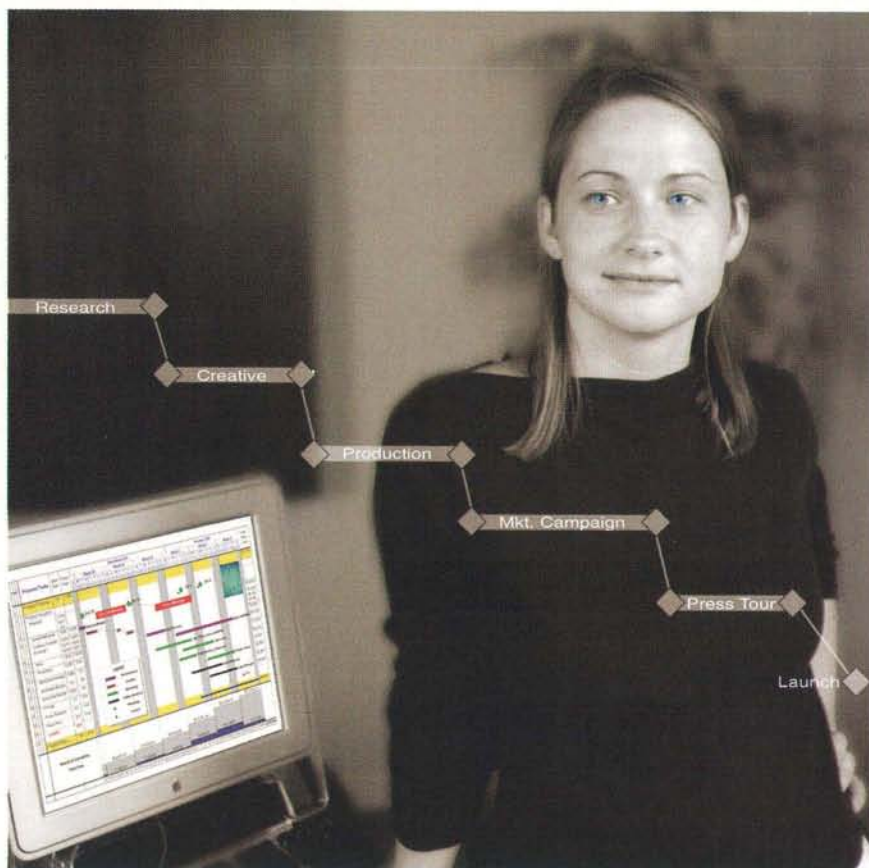


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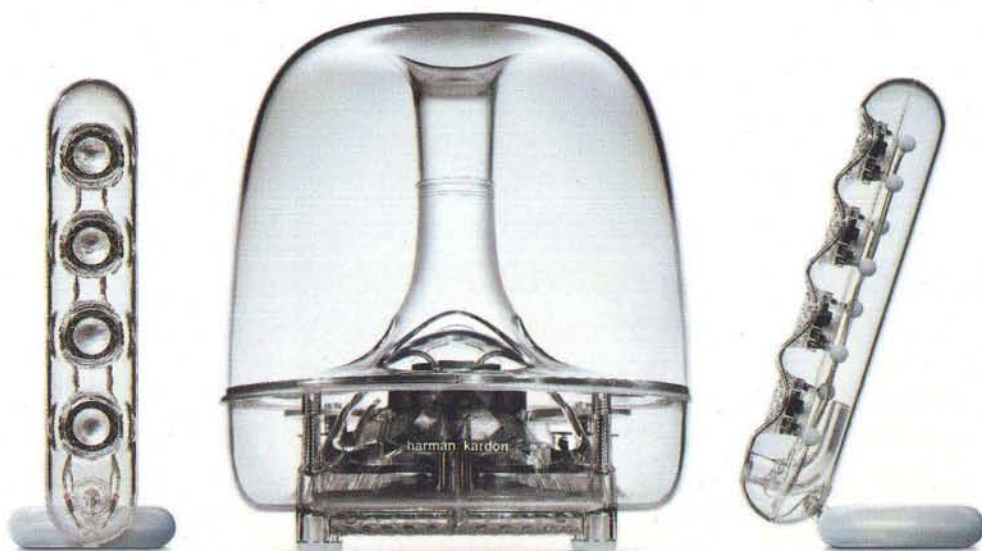
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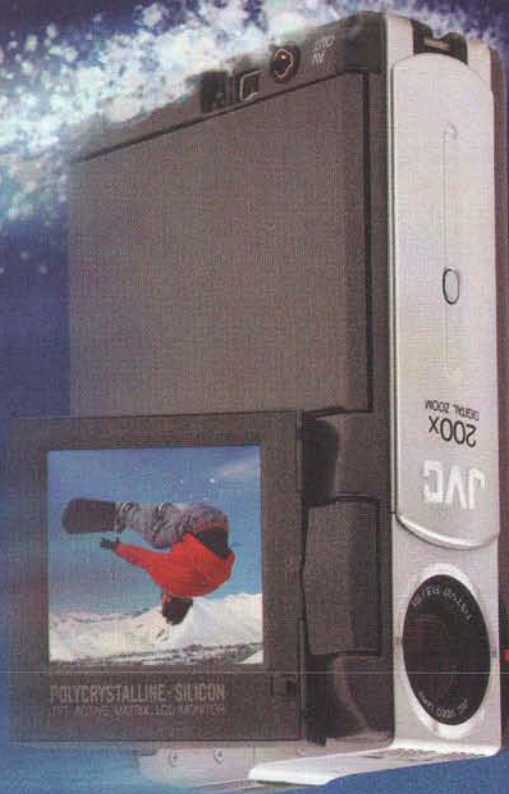
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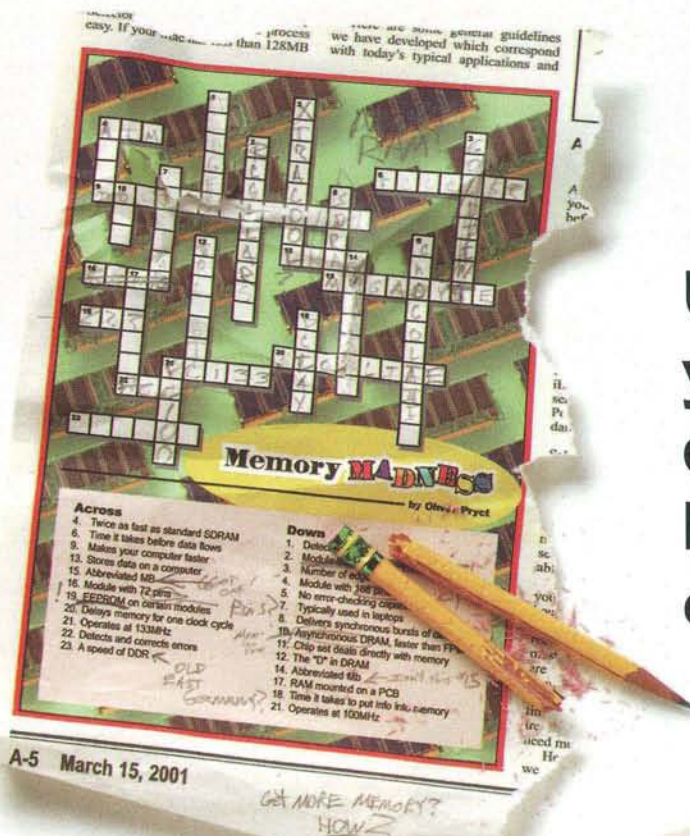
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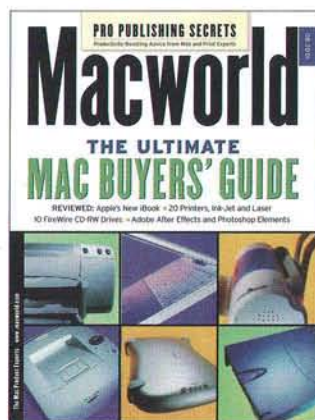
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True Colors

Most everyone seemed to love Bruce Fraser's in-depth look at 20 ink-jet and laser printers—and the overall depth of the August 2001 issue. But what really inspired some colorful comments from readers was Andrew Gore's column about our plans to use blue mice in future ratings, which will

be based on a product's performance in Mac OS X. That decision has many of you concerned—but rest assured, our primary goal is to serve readers, be the mice blue or red. It's when we choose a Flower Power color scheme that you should worry. **m**

The Ultimate August Issue

CURTIS RUNYAN I don't know how you did it, but I swear that you designed the August 2001 issue to solve nearly every computer problem I've been fighting lately. I was ready to throw my Lexmark printer out the window before I read your tip about adding memory ("Macworld's Ultimate Buyers' Guide: Printers")—thanks also for the suggestions on finding dirt-cheap RAM and the helpful review of printer technology. David Blatner's tips on preparing files for a service bureau (*Print Publishing Secrets*) were great refreshers. And the review of CD-RW drives was excellent.

ROLLIN J. SHOEMAKER I am a longtime subscriber, but I've been quite unhappy with recent issues. I didn't feel that there was much meat, and the magazine had a writing style that I didn't appreciate. The August 2001 issue is much, much better. This is the magazine that I used to get and that it appears I will get once again.

ANTHONY BUROKAS The latest issue of *Macworld* was chock-full of useful info, and it was the first in a very long time that I didn't blow through in less than an hour. There were still a few quickie articles and reviews, and that's OK—the crux of the magazine seems to have returned to substantial reporting. This means the issue had value. Keep it up, and you can expect my renewal.

We're glad you liked the August issue, and we hope this issue, with its "Ultimate Buyers' Guide: Digital Cameras," is just as valuable.—Ed.

Red Mouse, Blue Mouse

HILLARD SCHNEIDER Give mouse ratings only to OS X apps ("The Blue Mouse Cometh," *The Vision Thing*, August 2001)? Do you have any idea how many Macs in the 28 schools in my New York City school district have the 128MB of RAM required by OS X? None. Your policy of not

supplying users of these machines with product ratings doesn't help us—or, I suspect, the vast majority of home Mac users. And don't tell me that memory is cheap—we're breaking pencils in half to keep our students supplied.

SEAN HARRIS We Mac users are quick to quote the BMW analogy in support of our argument that software companies should cater to the Mac's relatively small 5 percent market share. It strikes me as odd and disconcerting, then, that *Macworld* would choose to completely ignore the whopping 32 percent of Mac users who have chosen to stay with the fully functional, noncartoonish, pre-OS X operating systems.

JON WINKLEMAN I was glad to read your recent editorial about moving over to blue mice, in part to encourage software makers to make the leap to OS X. Right now I'm in a computing limbo. I want to make the switch, and the sooner, the better. What holds me back is the fact that most of the software I own, especially the drivers for my peripherals, is in OS 9. I enjoyed your recent review of CD-RW drives (August 2001), and I need to buy one. However, I want to know which manufacturers have or soon will have OS X-native software. I would also like a new printer but have the same problem. Please consider publishing an article about which peripheral makers are aggressively developing for OS X.

GEORGE LAKEHOMER There are two facts that I believe you are overlooking in your zeal to support Mac OS X. First, Apple has always been a leader and innovator by being the only computer maker who manufac-

continues

tures hardware and operating systems. With OS X, it becomes just one more hardware manufacturer with no true proprietary OS. The second point concerns how quickly you have changed your tune about the stability of pre-OS X Mac operating systems. OS X is a parasite, depending on the life of another, completely different OS in order to live. The decision expressed in "The Blue Mouse Cometh" is the only wise move a magazine could make, and I applaud your doing so. But you should be cognizant of the potential wrath of misled readers who purchase a recommended product and end up feeling they've wasted money when it doesn't perform as reviewed. That's been part of the landscape for years, but now you're really walking the high-wire without a net.

☞ **JAMES SHOOP** Does dyeing the mice different colors hurt them? We must take a stand against the mistreatment of these poor mice, shamelessly dyed blue and then stuck between the pages of a magazine.

iBook Memories

☞ **JAY WEITZEL** In August's *The Vision Thing*, Andrew Gore says that he will "twist a few arms" to promote the move to Mac OS X. He proclaims it his mission to ensure that "the people who make Mac hardware and software . . . put maximum effort into bringing top-notch products to Mac OS X." Yet 12 pages later, *Macworld* awards four mice to Apple's low-end iBook (*Reviews*, August 2001), which (as your review notes) ships with only 64MB of RAM—insufficient to run OS X at all. If Apple itself cannot be bothered to ship OS X-compatible hardware, why should any other hardware or software vendor have their arms twisted to do so? I can conclude only that Apple's arm is one *Macworld* does not dare twist.

☞ **SUZANNE MACKENROTH** Please tell Andrew Gore that I have a new iBook (*Reviews*, August 2001), and Apple doesn't need to send a screw-

driver with this computer [so you can access the AirPort and RAM slots]. All it takes is a quarter.

Stop the Presses!

☞ **ELAINE NASH** I really loved the *Print Publishing Secrets* column (August 2001). The items David Blatner mentioned can't be stressed enough. I've worked with Macs in the printing industry since 1984. Now that every Tom, Dick, and Lucy has access to a computer, they automatically think they're graphic designers. People seem to have a hard time understanding that just because it looks good on screen doesn't mean you can output it to a printing press and duplicate it.

However, you missed a rather important item. Please, for the love of God, don't use Microsoft Word to design your newsletter, brochure, book, letterhead, or whatever. It is not meant to create items destined for a commercial printer. You should use it only for something you intend to print yourself on your own printer. If you are designing a product for printing at a commercial printer, please use a professional desktop-publishing package such as Adobe PageMaker or InDesign or QuarkXPress. You'll save everyone a fortune in Extra Strength Tylenol, and your service bureau will love you for it!

Get Lost, Macworld

☞ **LEE FREEDMAN** While the GPS-comparison article made for interesting reading ("Off the Map," *Buzz*, August 2001), I think the results of your test may have been a bit skewed in favor of the participant who had a map. Since the article did not specify where the people using the products were from, I would assume they were residents of San Francisco or the Bay Area. I'm sure it would be much easier to navigate over familiar streets using a map than to follow a GPS routing to a latitude and longitude position.

Philip Michaels, who held the map, was the only tester not from San Francisco. However, we think the

results had more to do with testing in an urban area than with his knowledge of the city streets.—Ed.

Off the Charts

☞ **JIM MOSKOWITZ** The "Monochromes Measure Up" benchmark (*Macworld's Ultimate Buyers' Guide: Printers*, August 2001) is misleading. A reader looking at the first two entries in the first column, which measured text-document printing speeds, would think that the Brother HL-1270N took twice as long as the Brother HL-1670N to print a text document, because the colored bar representing the amount of time is twice as long. The actual times? 67 seconds for the first printer and 54 seconds for the other. The scores are actually very close, and the graphic should show that.

We did indeed goof on the lengths of comparison bars in that benchmark's Text Document column. The listed times are correct.—Ed.

☞ Post your comments on our forums (www.macworld.com) or send them by mail to ☞ Letters, *Macworld*, 301 Howard St., 16th Fl., San Francisco, CA 94105; via fax to 415/442-0766; or electronically to letters@macworld.com. Include a return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters and posts. All published letters and forum comments become the property of *Macworld*.

CORRECTIONS

Energy consumption for the 733MHz PowerPC chip should be expressed in watt-hours, and a PowerPC 7450 powers the 733MHz Power Mac ("Power Macs," *Buzz*, August 2001).

The Epson Stylus Photo 780 is not OS X ready, and the estimated ink cost per page for all photo-quality printers except the Canon S800 was based on 5 percent ink coverage for black ink and 15 percent ink coverage for color ink ("*Macworld's Ultimate Buyers' Guide: Printers*," August 2001).

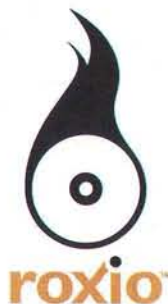
The author of the 15-inch flat-panel monitor roundup (*Reviews*, September 2001) was misidentified in the magazine's table of contents. Tony A. Bojorquez and James Galbraith wrote the piece.

John Francis created the image that appeared in "Inspiration Starts Here" (*The Vision Thing*, September 2001).

room to burn



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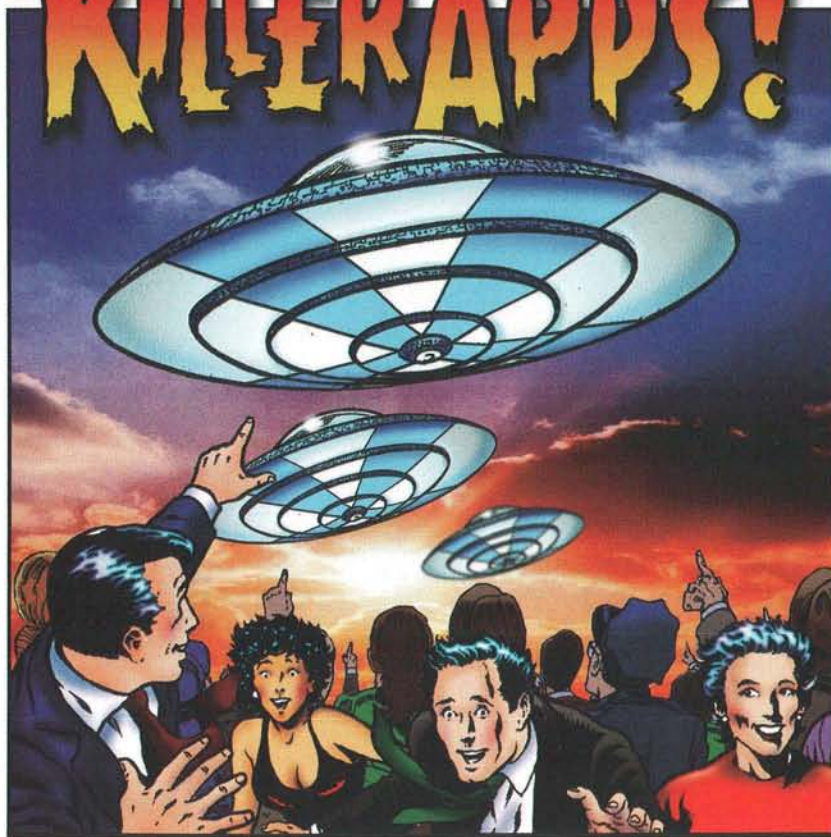
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mac beat

What's New, What's in the Pipeline, What's Hot

HERE COME THE KILLER APPS!



WHEN MAC OS X DEBUTED IN MARCH, it gave Mac users a first glimpse of their platform's future—but at the time, not many applications ran natively in the new OS. That's about to change as OS X moves rapidly out of the realm of early adopters and into the daily lives of Mac users. A major update—Mac OS X 10.1—promises to provide greater stability and more functionality.

And some familiar products will soon make their OS X debut. These are the killer applications—the essential programs that, along with the promised improvements in OS X 10.1, remove some of the final barriers keeping Mac users from switching to the new OS.

According to Apple, the release of OS X 10.1 marks the halfway point in the transition from OS 9 to OS X. How well the latest applications take advantage of the new OS will determine how smoothly the rest of the journey goes.

ADOBE'S MAC OS X DESIGNS

Adobe (800/833-6687, www.adobe.com) hopes to give graphics pros a reason to take a second look at Mac OS X, with new versions of InDesign and Illustrator that, in addition to introducing the spate of enhancements that are part of any update, run natively in OS X.

Adobe says it will release InDesign 2.0 this winter, meaning the application may not ship until early 2002. At press time, Adobe hadn't announced pricing. But with 800 new features, InDesign's upcoming release reaffirms a commitment to OS X by one of the Mac's most important developers.

Adobe has already hinted at many of the features we'll see in version 2.0 (see "Product Watch," *Buzz*, August 2001). Users will be able to easily make text, pictures, and boxes transparent. They'll also have sophisticated built-in table-making tools. And InDesign 2.0 will let users import and export document content in Extensible Markup Language (XML). The Show Structure feature will split the main window to give an outline view of XML tags identified by name. Adobe is billing the structural-view function as a *beta*—possibly an acknowledgment that the tool needs some work before it will be fully functional.

Adobe has also worked to enhance InDesign's performance. Mundane but critical tasks such as placing text and graphics should be speedier in the new version.

Beating InDesign 2.0 to market, Illustrator 10 is set to ship before the end of the year, priced at \$399 (\$199 for an upgrade). The update intro-

duces templates and a Variables palette designed to automate repetitive work—in concert with scripts from Adobe and third-party developers that draw from databases.

Users can apply elaborate effects to text or images in a template and then tag them as variables. Even as the underlying text or image changes, Illustrator 10 continues to apply the effects.

Adobe reports that, in a first for the Web, Illustrator 10 will let you create Web graphics, on-the-fly, that retain effects applied to the original. Users can create a template with Illustrator and generate variations by replacing the data using scripts or Adobe's new dynamic imaging server, AlterCast. Aimed at e-commerce sites, AlterCast, too, will be available before the end of 2001; prices start at \$10,000.

The remainder of Illustrator 10's new features fall along more-familiar lines: an Envelope tool, which applies editable effects to raster and vector objects; four new drawing tools; expanded Selection options that include a Photoshop-like Magic Wand; and eight Symbols tools that allow users to create one object and reuse it a number of times. Also new is the ability to combine multiple shapes into one compound shape that you can edit.

Adobe's OS X lineup is still missing the ultimate killer application, Photoshop. While the company confirms that the image-editing software's next major update software will run natively in OS X, it hasn't said when Mac users can expect that release.

OFFICE REMODELING

Mac users who run Microsoft Office (800/426-9400, www.microsoft.com)—and there are quite a few of them—have been waiting for the software giant to update its productivity suite to take advantage of the new Mac operating system.

For that reason, the fall release of Office v.X for Mac is a significant step in the transition to OS X. Although the Office update features few major additions, Microsoft has successfully adopted OS X's look and feel, right down to redesigned toolbars and Aquafied dialog boxes.

Office v.X incorporates the Quartz graphic technology of OS X to make graphics look sharper and smoother. In Excel, for example, users will be able to incorporate gradients and transparencies to liven up charts and graphs.

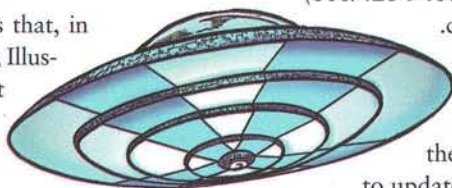
The Office update replaces alert and dialog boxes with sheets, an OS X tool that allows users to jump from one document to another without

having to first respond to the message (as you must with a dialog box).

Office's newest application, Entourage, has undergone the most changes, including a redesigned interface. New, centralized buttons help you jump among Entourage's mail, address book, calendar, and other components. Microsoft has also redesigned the calendar to make adding items easier. The e-mail application now includes Word-like editing tools, such as Multiple Undo. And you can insert graphics and QuickTime movies into the body of your e-mail messages.

Other changes aren't tied to the new OS: the Multiple Selection and Clear Formatting tools in Word work together to let you select several blocks of text at once and apply customized formatting to them; Excel adds keyboard-customization features and an AutoRecover feature; and PowerPoint's QuickTime Movies feature gets improvements.

Office v.X is scheduled to ship in November, and it's priced at \$499 (Office 2001 users can upgrade for \$149; users of earlier versions, for \$299).—PHILIP MICHAELS AND TERRI STONE



More Info: www.macworld.com/subject/macosx/applications.html

Has your killer app gone native yet? Check out *Macworld's* online progress report for key Mac software as it moves to OS X.

LINK

RETROSPECT BACKUP MOVES AHEAD

Mac users who rely on Retrospect Backup, from Dantz Development (800/225-4880, www.dantz.com) to safeguard their data have been anxiously awaiting a Mac OS X-native version of the backup software. Though a Retrospect Client beta has been available for Mac OS X since the spring, Retrospect 5.0, to be released this fall, will allow users to schedule and run backups directly from Macs running OS X.

Retrospect Express Backup will cost \$49 for new users; Retrospect Desktop Backup, \$149 for new users; Retrospect Workgroup Backup, \$299 for new users; and Retrospect Server Backup, \$499 for new users. (Dantz has not yet set upgrade pricing for the four products.) Starting with version 5.0, Express and Desktop won't back up computers running

AppleShare IP or Mac OS X Server. Instead, Workgroup will let users back up a single, local server; the new Server Backup is Dantz's multiserver product.

It's taken Dantz this long to bring Retrospect to OS X because the program must write to various external hardware devices, such as CD-R, tape, and removable drives. Mac OS X doesn't offer the robust support for these devices that Mac OS 9 did. In addition, Mac OS X's file system is much more complicated, making it much harder to restore files from a backup when the need arises. "OS X has an incredible amount of file-system minutia that we need to recognize at the time backups occur and honor at restore time," says Eric Ullman, Dantz Development technical marketing manager.—JASON SNELL

PRO FILE

Hawkish on the Mac

Q&A with TONY HAWK

Tony Hawk's list of achievements is impressive: he's the inventor of more than 50 skateboarding tricks, the only skateboarder to pull off "the 900" (a two-and-a-half-turn maneuver) in competition, and the standard by which people measure performance in his sport—even after his retirement from active competition. And then there are his business interests, which include clothing, skateboards, film, and video games. Is there anything we haven't covered? "Just that I'm a true Mac devotee," he says. Chances are, when Hawk isn't on his skateboard, he's in front of his Power Mac or PowerBook, doing everything from burning CDs to editing digital video.—ANDREW SHALAT

Q: You're mainly doing video on your Macs. Is that for 900 Films, your video-production company?

A: Yeah, film for 900 Films, film for sending out to news agencies, film

More Info: www.macworld.com/2001/11/macbeat/hawk.html

Tony Hawk talks about Mac OS X and his video game, Tony Hawk's Pro Skater 2, which runs on the new OS.

LINK

for using on the Web. I'll tweak footage using Media Cleaner Pro.

Q: How many *Bones Brigade* [Hawk's skateboarding team] films were there?

A: There were, like, six when I was on the team.

Q: And that's what got you started?

A: That's what got me interested in video—just watching the editing. It wasn't quite the time of Media 100 yet, so we did the editing on a Mac. But it wasn't nonlinear. It all went to tape.

Q: So it was hooked to a $\frac{3}{4}$ -inch editing bay?

A: Yeah. I watched, and I was into Amiga, and I heard about the Video Toaster coming out, and I ended up getting one of those. I learned the basics of nonlinear editing, and then I eventually bought a Media 100.

Q: And in the mid-1980s to the late 1980s, a Media 100 system was very expensive.

A: Yeah. It took a lot out. And in those days, I wasn't making any money, so I took a big risk.

Q: Do you do films or video?

A: Both. Right now we're just shooting action stuff—16mm,

35mm of skateboarding, snowboarding, action sports like that.

Q: As far as your skating is concerned, do you have any unfulfilled ambitions?

A: Not really. I'm enjoying my time now. I'm focusing on the projects I'm doing and trying to be better, like with the video game and with clothing and shoes. And as soon as I heard that Activision was doing the PC version [of Tony Hawk's Pro Skater], I began pushing for Mac. I met with Apple when I went to the keynote

speech [at last January's Macworld Conference & Expo]. They helped push my Titanium PowerBook order through, because I literally ordered my Titanium the night of Expo. I use it daily. If you ask my wife, she'll say I use it too much.

Q: If you were no longer allowed to skateboard, what do you think you would do?

A: I'd spend more time on my Mac. I'd probably be more heavily involved with my companies—with developing Web sites, that sort of thing.

AT A GLANCE

TONY HAWK

AGE: 33

RESIDENCE: Carlsbad, California

MAC: Power Mac G4/450 with 256MB of RAM, Titanium PowerBook G4/500

FAVORITE SOFTWARE: Adobe Photoshop, Netscape Communicator, Apple Final Cut Pro

PERIPHERALS: Hewlett-Packard DeskJet 950c, Umax PowerLook 1100 scanner

www.gorillaz.com

CLICK HERE

Gorillaz in the Midst

The music world survived the Monkees—so why not the Gorillaz? This four-piece hip-hop band—made up of Murdoc, 2-D, Noodle, and Russel—is nothing but a collection of Flash-based characters, yet they're still more animated than Peter Tork. The band-cum-Flash animation is the creation of Damon Albarn, singer for Blur, and Jamie Hewlett, creator of the underground comic *Tank Girl*. Their online home, www.gorillaz.com, really peels our banana. The site allows visitors to wander the halls of the band's Kong Studio, courtesy of a Shockwave Flash plug-in. With nearly as many rooms as Graceland, the studio has all sorts of Flash-based gadgets to monkey around with. Users can create their own musical tracks on Russel's mixer, spray-paint the bathroom walls with graffiti, and even play around on Noodle's Mac. And that's just the beginning of the interactive hijinks at a Web site that's more fun than a barrel of monkeys.—MATHEW HONAN





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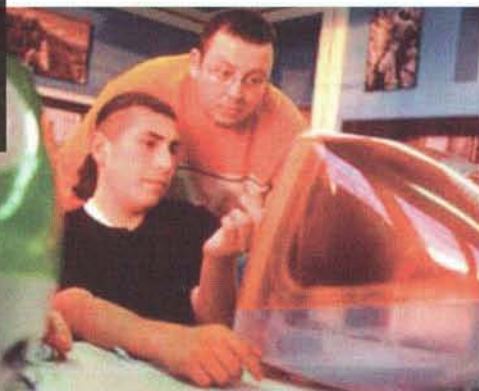
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Students Gain Reel Experience

Mac Beat



Teacher Marco Torres (standing) reviews high-school senior Luis Ochoa's video project.

Marco Torres, a teacher of social studies and media at California's San Fernando High School, had a vision: a room full of Power Mac G4s, iMacs, and iBooks—machines that would turn students into media marvels. The resulting Community Inspiration Studio has made the school a hotbed of digital-filmmaking creativity.

"We focus on project-based learning," Torres says. Take a recent assignment: to make a video about immigration—a subject that hits close to home at a school where a majority of the students can trace their family roots to Mexico. Students wrote an outline and drew storyboards. "They know every part of their story before they ever take a piece of equipment out of this room," Torres adds.

After collecting their footage with DV camcorders, students imported it to iMac DVs and used iMovie to capture and edit clips. The student videographers compressed their videos with Media 100's Media Cleaner and saved them to QuickTime.

Even if these students don't pursue film careers, the work is giving them an appreciation for the art of filmmaking. "When I first saw *Toy Story*, I thought they could have done it better," says sophomore Jose Juarez, who worked on computer animation in Torres's class. "Now I know how amazing it is, what they did, how hard it is, and how long it takes."—ADELIA CELLINI

Alsoft Weathers the Storm

BACKUP SPARES DATA FROM LOSS IN FLOOD

When Al Whipple left work on Friday, June 8, it was just like the start of any other summer weekend. Sure, Tropical Storm Allison was pelting the Houston area with heavy rain, but the president of software-utility maker Alsoft never guessed that the weather posed any threat to his company.

By Saturday morning, Alsoft's office was under 14 inches of water. The flooding ruined shipping boxes and left Alsoft's computer towers and printers covered with grime. And the water mixed with the lead-acid batteries of the company's ten or so uninterruptible power supplies, completely frying the hardware.

But Alsoft didn't lose one bit of critical data—records, sales information, or other files.

The company, which makes DiskWarrior and other utilities, had used Dantz Development's Retrospect Backup (800/225-

4880, www.dantz.com) to back up all of its data on DAT drives. Alsoft's comprehensive strategy for backing up data kept a catastrophe from turning into a complete loss.

"Far too many individuals and small businesses don't think about implementing a backup strategy and disaster-recovery plan until it's already too late," said Dantz Development technical marketing manager Eric Ullman.

Alsoft backs up its servers onto 4GB DAT drives; each day, a different company administrator is responsible for the process. Each of the company's 14 employees has a DAT tape drive with which to back up data, and Whipple suggests that they do so daily.

"People used to rail at me about having a strict backup policy," Whipple says. "I don't hear anybody complaining now."

—PHILIP MICHAELS

COOL STUFF

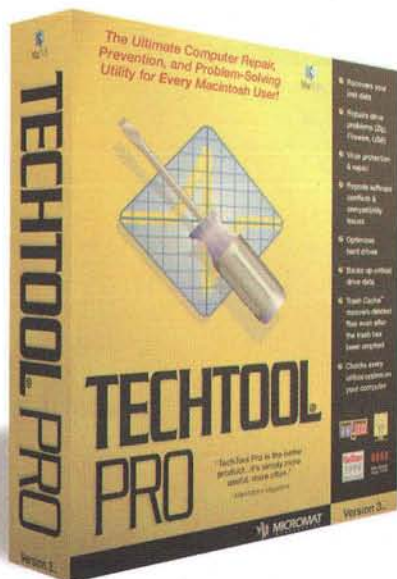
Thin Is In

At just an inch thick, the Titanium PowerBook G4 stands out as one of the sleekest, smallest computers available. But since it has only two USB ports, users who want to hook up several external devices either have to endure a tangle of daisy-chained cords or scrap aesthetics by using a USB hub thicker and clunkier than the laptop itself. Keyspan (510/222-0131, www.keyspan.com) clearly understands the problem. Its new USB 4-Port Mini-Hub has as much style—and as little bulk—as the new PowerBook. The hub, which comes in black or silver, is only a centimeter thick—just large enough for a USB connection. With a retractable USB cord, the device isn't much wider than a credit card, but it's fully functional. Keyspan's hub supports both self- and bus-powered modes and will connect up to four USB 1.1 devices directly. The only thing that *isn't* tiny is the price: \$49. Most other four-port models sell for less money: \$20 to \$30. But the Mini-Hub will help you save a different and equally important commodity: space.—MATHEW HONAN



In with the new...

In with the newer...



TechTool Pro 3 is the super utility for your Macintosh. Besides repairing and recovering data, TechTool Pro can help you circumvent problems in the first place. Our new virus detect and repair feature, as well as our software conflict check feature, lets you keep your computer in tip-top shape. When booted from the included emergency CD, you can even check, repair and optimize your OS X computer.

Every day, more and more Macintosh professionals are choosing TechTool over other system utilities. In fact, even Apple Computer includes TechTool Deluxe with every copy of their AppleCare™ Protection Plan. Simply put, TechTool Pro 3 is the most complete and powerful troubleshooting utility available for your computer. Why would you settle for anything less?



For Apple's next-generation operating system, you'll need a next-generation disk utility. That's why Micromat has introduced Drive 10, the first and final disk utility for Mac OS X. Problems with your drive? Drive 10 can repair almost any drive problem with one simple click of your mouse. All within OS X's native environment.

While Drive 10 is a new product, it is derived from TechTool Pro, Micromat's world-class diagnostic and repair utility. Using TechTool's time-tested routines as well as some new routines developed exclusively for OS X, Drive 10 offers many tools for checking and repairing any drive on your system. Don't entrust your OS X drive to ancient utilities. Protect your data and drive safely with Drive 10.



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Quick, Quicker, Quicken

When Intuit asked Quicken users what features they wanted in future versions of the personal-finance software, two requests kept coming up—OS X compatibility and improvements to existing tools. You'll see efforts to meet both requests in Quicken 2002 Deluxe for the Mac. And while Mac users making the switch to OS X will appreciate a native version of the application, time-saving additions to Quicken are likely to have the biggest effect on how you use the software.

Newly Carbonized, Quicken has adopted OS X's Aqua look and feel. Under the hood, Intuit says, users of Quicken 2002 will notice improvements in performance and stability when running the program in the new OS. The \$60 program (less a \$20 rebate for users upgrading from prior versions) also runs on Mac OS 9.0.4 and later. Regardless of the OS you use, Quicken 2002 has these new features (see below).—PHILIP MICHAELS

- **Downloadable Investment Transactions** Fidelity Investments and TD Waterhouse let Quicken users download purchase, dividend, and stock-sale records from the Internet.
- **Auto-Reconcile** When you download a transaction, Quicken checks to see if your online balance matches the figure in your Quicken register. If it does, the application automatically reconciles your account. If it doesn't, Quicken lets you know.
- **One-Step Update** Instead of dialing up online accounts one at a time, Quicken 2002 users can update data with a single click. Quicken's PIN Vault, like the Mac OS Keychain, stores your personal information numbers from multiple accounts and activates them with one password.
- **Capital Gains Estimator** This tool estimates capital gains or losses on stock transactions before you make them, to help you minimize your tax bite.

MAC STUFF

Screen Saver

Jamie Dresser, purchasing manager for new-product development at Other World Computing (800/275-4576, www.macsales.com), was looking for a way to protect his PowerBook from the scuffs that can appear on the screen when it rubs up against the keyboard. So he turned to a low-tech, but effective, solution: a swatch of tanned cowhide. From these humble origins was born the \$15 Laptop Screen Protector, an 11.5-by-5-inch piece of black leather that Other World Computing sells to users of any Mac portables. The strip keeps your laptop's keyboard—and the oily residue from your fingertips—from contacting the screen when you snap your Mac shut. And if cruel fortune saddles you with some Windows-running monstrosity, the Laptop Screen Protector has you covered there, too.—PHILIP MICHAELS



HARDWARE

DIGITAL CAMERAS

● A 4.1-megapixel camera from Canon (800/652-2666, www.usa.canon.com): The

PowerShot G2 (\$899) has a 3× optical zoom and a 3.6× digital zoom.

● Three digital cameras from Fuji Photo Film (800/800-3854, www.fujifilm.com): The

FinePix A101 (\$179) is a 1.3-megapixel camera with a 2× digital zoom. The **FinePix**

A201 (\$249) is a 2-megapixel camera with a 2.5× digital zoom. The **FinePix 2600**

(\$299) is a 2-megapixel camera with a 3× optical zoom and a 2.5× digital zoom.

● A 4.1-megapixel camera from Olympus America (800/622-6372, www.olympusamerica.com): The

Camedia D-40 Zoom (\$799) sports a 2.8× optical zoom and a 2.5× digital zoom. It will ship in October.

● Three digital cameras from Sony (888/222-7669, www.sonymstyle.com/digital imaging): The **Cyber-shot**

DSC-F707 (\$1,000) is a 5.24-megapixel camera with a 5× optical zoom lens, an

F2.0 aperture, and two LCDs. The **Cyber-shot DSC-**

P5 (\$600) is a 3.34-megapixel camera with 3× optical and 6× digital zoom. The

Cyber-shot DSC-P3 (\$500) is a 3.34-megapixel camera with a fixed lens and 3× digital zoom. The cameras will

be available in October.

DISPLAYS

● A line of graphic tablets from Wacom (800/922-9348, www.wacom.com): The

Intous2 series features

a cordless pen, new digital-oversampling technology, and a cordless mouse. The tablet comes in five sizes: 4 by 5 inches (\$220), 6 by 8 inches (\$400), 9 by 12 inches (\$510), 12 by 12 inches (\$570), and 12 by 18 inches (\$820).

MP3 PLAYERS

● A successor to the Rio 300 MP3 Player, from Sonic-Blue (800/468-5846, www.riohome.com): The **Rio One** comes with a USB connection and 32MB of memory, upgradable to 160MB. It supports MP3 and Windows Media formats. (\$100)

PRINTERS

● A color ink-jet printer from Canon (800/652-2666, www.usa.canon.com): The

S200 Color Bubble Jet Printer (\$79) has a color resolution of 2,880 by 720 dots per inch (720 by 720 dpi in black-and-white). It prints 5 pages per minute in black-and-white and 3 pages per minute in color. It ships in October.

● Five color ink-jet printers from Epson (800/873-7766, www.epson.com): The

Stylus C40UX (\$79) offers 1,400-by-72-dpi resolution and prints 8 pages per

minute for black-and-white documents and 3.5 pages per minute for color. The

Stylus C60 (\$99) has 2,880-by-720-dpi resolution and prints 11 pages per

minute in black-and-white and 8 pages per minute in color. The **Stylus C80**

(\$149) also offers 2,880-by-720-dpi resolution while printing 20 black-and-white pages per minute

and an 8-by-10-inch color photo in 42 seconds. The

Stylus C80N (\$349) and *continues*

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What's HOT

A QUICK LOOK AT THE WORLD OF TECH

1. Apple wins an Emmy Award for FireWire. Meanwhile, the makers of USB hold out hope for a Golden Globe.
2. Microsoft readies Office v.X for OS X. Next up for Microsoft: Carbonizing Steve Ballmer to make him more stable.
3. Hewlett-Packard is buying Compaq for \$25 billion. Consumers sigh with relief. "We could never tell their computers apart anyhow."

Stylus C80WN (\$449)
offer built-in network capabilities.

- A digital photo printer from Sony (888/222-7669, www.sonymstyle.com/digitalimaging): The **DPP-MP1** (\$280) is a miniature dye-sublimation printer that weighs less than one pound. Powered by an AC adapter or a \$70 optional battery pack, the printer can be driven via USB or directly from Memory Stick media. It will be shipping in November.



SOFTWARE DEVELOPMENT SOFTWARE

- **CodeWarrior 7.0** from Metrowerks (800/377-5416, www.metrowerks.com): The latest version of the development software supports both the classic Mac OS and OS X, allowing programmers to develop a single application that runs on either version of Mac OS (\$599; \$299 for license renewal).

EDUCATION SOFTWARE

- **Accordance 5.0** from OakTree Software (877/339-5855, www.oaksoft.com): The latest version of the

Mac-only Bible program adds Window and Amplify palettes for easier text access and an enhanced search window (\$139 for standard level; upgrades start at \$49).

- New and updated educational software from School Zone Interactive (800/253-0564, www.schoolzone.com): The **Flash Action** series features updates to the Addition/Subtraction and Multiplication/Division titles (\$15 each) for faster playback and an enhanced built-in teacher component. School Zone's Electronic Workbooks series, aimed at preschoolers through fourth-graders, adds two new titles: Time, Money & Fractions and Vocabulary Puzzles 1 (\$20).

GRAPHICS SOFTWARE

- **LightWave 3D 7.0** from NewTek (800/847-6111, www.lightwave3d.com): The updated 3-D-animation and -rendering software, which runs in both OS 9 and OS X, adds a motion mixer for nonlinear animation; a tool for built-in hair, fur, and landscape creation; and a new depth-of-field filter, among other features (\$2,495; \$495 for upgrade).

PRODUCTIVITY SOFTWARE

- OCR software from

Abbyy (877/328-2229, www.abbyyusa.com):

FineReader Pro 5 for Mac is Abbyy's first OCR software for the Mac OS. FineReader converts scanned images into editable text that retains the original layout (\$129 to upgrade from any OCR software).

NETWORKING SOFTWARE

- An OS X-native version of Timbuktu from Netopia (800/485-5741, www.netopia.com): Besides compatibility with OS X, **Timbuktu Pro 6.0** adds large-file support to the remote-control networking utility (\$180; upgrade pricing varies).



ANNOUNCED

- An Emmy award for Apple (800/692-7753, www.apple.com): The company received a 2001 Primetime Emmy Engineering Award from the Academy of Television Arts & Sciences for FireWire's impact on the television industry. Apple developed the data-transport technology known as the IEEE 1394 standard.—Compiled by PHILIP MICHAELS

MAC OS X UPDATES

powered by  **versiontracker.com**

America Online 14B

Beta version of online service's OS X client

Apple Darwin Streaming Server 3.0.1

Server for streaming QuickTime data

bManager 1.0.1

Bug fixes for contact manager

Contact This 1.1

Entourage address book importer for Mail

Griffin iMate X 1.0b5

Driver beta for ADB-to-USB adapter

Interarchy with FTP Disk 5.0

File transfer, server/network info tool

IspQ VideoChat X 5.0.1

Internet Video chatting/conference software

LiveStage Pro 3.0.1

QuickTime 5 interactive authoring environment

MacGhostView 2.2

General purpose PostScript and PDF previewer

MacMAME 0.53a

Port of PC multi-emulator for classic arcade games

MacSQL 2.0.1

SQL database management tool

Mesa 3.0.2

Improved Excel import for spreadsheet software

Mystery Island II 1.1.1

Bug fixes for adventure game

Netscape X 6.1

Beta of native Web browser and e-mail client

OmniGraffle 1.1.1

Diagramming and graphic software

RBrower 2.9

Full-featured graphic FTP/SSH client

RealBasic 3.5

Development software

Sawmill 6.2

Server log analysis tool

sMailing 1.6

Utility for sending personal e-mail to multiple addresses

SQL4X 1.3

Cocoa-based MySQL installer

Tex-Edit Plus X 4.1.3b2

Beta of text editor

TextSoap 3.0.1

Filters to clean up text and e-mail formatting

VST Tri-Media Reader X 1.0.0

Driver for smart media reader

Who's There? X 1.1

Analysis tool for access attempts detected by firewall

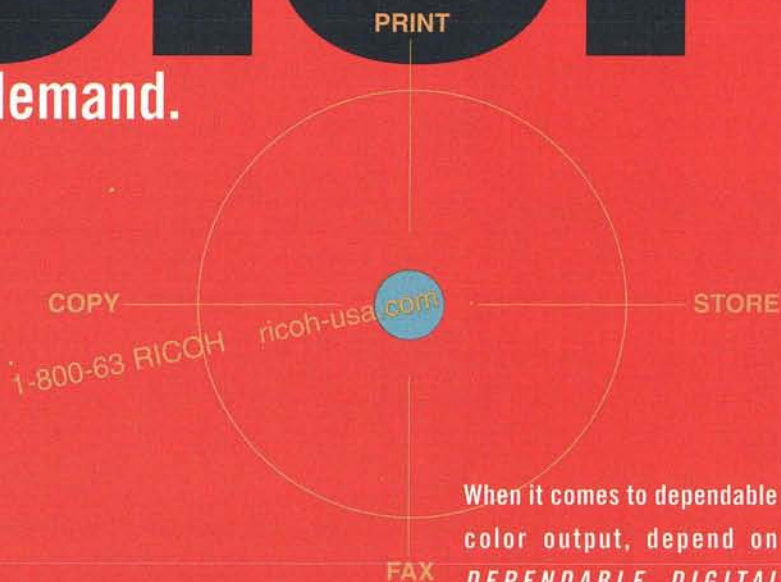
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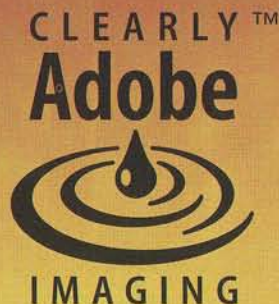
Lease price per month* **\$96⁰⁰**

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Lease price per month* **\$113⁰⁰**



*Lease Prices based on 36 month lease.

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product reviews

Hands-on Evaluation and Authoritative Buying Advice

Power Mac G4/800 Dual Processor

High-End Machine Shows Off Mac OS X's Multiprocessor Fluency

BY RICK LEPAGE



APPLE HAS BEEN SELLING dual-processor Power Macs for a while now. But multiprocessing as a technology has met limited acceptance among Mac users, finding a home mainly among graphics professionals wanting maximum performance from their workstations. Apple's latest dual-processor offering, the \$3,499 Power Mac G4/800 DP, has a very good mix of performance and features that will appeal to the traditional graphics customer. But it's also an excellent Mac OS X machine, showcasing the new operating system's symmetric multiprocessing capabilities.

Built for Speed

The G4/800 DP comes with two 800MHz PowerPC G4 processors, each with 2MB of Level 3 cache; 256MB of RAM (with room for 1.5GB total); a fast 80GB 7,200-rpm UltraATA/66 hard drive; a DVD-R/CD-RW SuperDrive, which can create both CDs and DVDs; and an Nvidia GeForce2 MX TwinView video card in a 4× AGP slot, which can drive a newer Apple display (one with an Apple Display Connector) and a VGA monitor simultaneously. Apple has also outfitted the machine with its standard array of expansion slots:

POWER MAC G4/800 DP

Rating: ★★★★★

Pros: Good performance with multiprocessor-aware applications; excellent Mac OS X system; built-in dual-display support; fast hard drive.

Cons: Pricey for general OS 9 use; SuperDrive lacks manual eject.

Company's estimated price: \$3,499

OS compatibility: Mac OS 9, Mac OS X

Company: Apple Computer, 800/692-7753, www.apple.com

two USB ports, two FireWire ports, a 56K V.90 internal modem, an AirPort slot, and four internal PCI slots in addition to the 4× AGP slot.

Our unit shipped with Mac OS 9.2.1 and Mac OS X 10.0.4, Apple's iMovie 2.0 and iDVD 1.0, and Smith Micro's Faxstf fax software. By the time you read this, the G4/800 DP should include iDVD 2.0 and Mac OS X 10.1, which will support CD-R and DVD-R burning.

It's sprightly overall, but as a basic Mac OS 9 machine, the G4/800 DP is not as fast as the top-of-the-line, single-processor Power Mac G4/867 (★★★★★; *Reviews*, October 2001) on tasks or applications that don't take advantage of the dual processors (for example, Microsoft Word, Intuit's Quicken Deluxe 2001, QuarkXPress, and Mac OS's Finder). The G4/800 DP came up a bit short

in our Speedmark and Quake (OS 9 version) benchmark tests—due to the slower 800MHz chip and the fact that the applications are not multi-processor-aware.

You're not going to pay \$1,000 more for a dual-processor machine if all you run are business applications, a Web browser, and an e-mail program; it's designed for software that's optimized to take advantage of the second G4. For Mac OS 9 this includes Apple's Final Cut Pro; Adobe Photoshop, Premiere, and After Effects; Maxon Computer's Cinema 4D XL; and Terran Interactive's Media Cleaner Pro. (See www.apple.com/powermac/multiprocessing.html for a list of multi-processor-capable applications.)

In our tests, tasks in Cinema 4D and iTunes went faster with the additional G4 processor. Some programs are more optimized than others; for example, in the Cinema 4D complex-rendering test, the G4/800 DP lopped more than 40 percent off the G4/867's time; with the iTunes MP3 encoding task, it showed smaller but still appreciable margins.

Since not all Photoshop filters are multiprocessor-aware, performance with Adobe's imaging application was mixed. Filters such as Gaussian Blur and Unsharp Mask take advantage of the G4/800 DP's extra processor, so its times were slightly better than the G4/867's. But the G4/867 was faster in the RGB-to-CMYK conversion test—as you would expect, since

this function is not optimized for multiple processors.

Zooming to the Future

If the G4/800 DP ran just Mac OS 9 and a few multiprocessor-friendly applications, it might be appropriate only for a narrow niche of creative professionals. For many general-purpose users, the single-processor 867MHz model would be a more cost-effective purchase.

The arrival of Mac OS X—a fully threaded operating system that takes advantage of every processor you throw at it, for almost any task—mixes things up considerably. With the new OS on a dual system, you'll see performance improve even if all you run are applications that aren't optimized for multiprocessing.

When we restarted our G4/800 DP in OS X, it became a whole different Mac. Everything was zippier—applications launched faster, background processes didn't bog it down, the OS as a whole was more responsive, and even OS X's Classic mode felt as fast as OS 9 on a 733MHz Power Mac. Photoshop 6.0.1 running in Classic felt snappy; many filter operations on large files were only a second or two slower than in OS 9.2.1.

We also loaded a prerelease version of OS X 10.1 on our unit and noticed a further performance improvement over version 10.0.4. That bodes well not only for the OS, but for the practicality of multiprocessor Macs in general.

Minor Drawbacks

As we wrote in our review of the single-processor 867MHz Power Mac—which uses the same quicksilver case as the G4/800—two aspects of the new G4 design are worth mentioning. One is the absence of a manual-eject button for the SuperDrive tray; you need the Apple Pro Keyboard or a control-strip module to open the tray. The other common complaint is the lack of an audio-in port, though the increasing number of USB audio products makes this a minor issue.

Another item to note is that the G4/800 DP originally shipped with Mac OS X 10.0.4, which didn't support CD-R or DVD-R burning. The problem is solved in OS X 10.1, which adds those capabilities.

Macworld's Buying Advice

Like Apple's earlier dual-processor machines, the Power Mac G4/800 DP is a very good fit for any Mac user who works with Photoshop, Cinema 4D, Final Cut Pro, or other multi-processor-aware applications. But it's also ideal for anyone looking to make the leap to Mac OS X: the G4/800 DP showcases nearly every aspect of the new operating system's multiprocessing capabilities. Graphics pros who want extra processing power in Mac OS 9 can buy the G4/800 DP now and rest comfortably in the knowledge that, when they're ready to move to OS X, their investment in multiprocessing will continue to pay off. **m**

Multiprocessor Math



Reference systems in <i>italics</i> . Best results in bold . ■ Shorter is better. ■ Longer is better.	SPEEDMARK 2.1	ADOBE PHOTOSHOP 6.0.1		CINEMA 4D XL 7.1	ITUNES 1.1	QUAKE III
	Overall Score	Gaussian Blur	RGB to CMYK	Render	MP3 Encode	Normal
Apple Power Mac G4/800 DP	203	3	14	5:11	37	95
Apple Power Mac G4/867	215	5	12	8:53	47	107
Apple Power Mac G4/733	183	5	15	10:33	58	78
Apple Power Mac G4/533 DP	176	3	25	6:52	52	73
	Better ▶	◀ Better	◀ Better	◀ Better	◀ Better	Better ▶

Speedmark scores are relative to those of an iMac 350MHz (1999), which is assigned a score of 100. Photoshop and iTunes scores are in seconds. Cinema 4D XL scores are in minutes:seconds. Quake scores are in frames per second. We tested the reference systems with 256MB of RAM, a default system-disk cache, and virtual memory enabled (except for Photoshop tests). We set displays to 1,024-by-768-pixel resolution and 24-bit color. The G4/800 DP had OS 9.2.1 installed, the G4/867 ran Mac OS 9.2, and the G4/533 DP and G4/733 ran OS 9.1. For Photoshop tasks, we used a 50MB file with the memory partition set to 150MB and History set to Minimum. Cinema 4D XL rendered a 640-by-480-pixel model with oversampling set to 4 by 4. We tested MP3 encoding with an audio-CD track that was 9 minutes and 25 seconds long and converted it using iTunes' Better Quality setting of 160 Kbps. We ran Quake III 1.29f's Time Demo 1 at 640-by-480-pixel resolution, with graphics set to Normal. For information on Speedmark, visit www.macworld.com/speedmark.—Macworld Lab testing by Ulyssis Bravo

Mac OS X Server 10.0

New Edition Delivers Features but Falls Short in Documentation

BY MEL BECKMAN

When Mac OS X Server appeared two years ago, pundits and users alike welcomed it as an excellent first effort (*Reviews*, July 1999). With a Unix foundation, advanced network support, preemptive multitasking, and remote client support, it made the Mac a contender as a solid workgroup and Internet server. But

because Apple has issued only a smattering of minor updates and patches since the server's release, Mac users have been impatiently awaiting the first major upgrade.

They won't be disappointed by what Apple has delivered with Mac OS X Server 10.0.4. It has an Aqua user interface, identical to its desktop counterpart; a raft of Web-publishing tools, including PHP, MySQL, Java Server Pages, and WebDAV; significantly better remote administration; many performance improvements; and some minor enhancements. Dishearteningly, though, Apple has

fallen short in two very important areas: documenting all of Mac OS X Server's features and providing a complete set of graphical administration tools.

Package Deals

OS X Server now comes in two packages, one for ten users and one for unlimited users. Apple has removed the WebObjects development environment—you get support only for executing WebObjects—and added software-license protection, although the licenses are not time-limited. And current users must pay full price for

MAC OS X SERVER 10.0.4

Rating: ★★½

Pros: Aqua interface; remote administration; Web-publishing tools.

Cons: Weak documentation; missing some graphical administration tools; difficult migration from previous release.

Company's estimated price: Ten users, \$499; unlimited users, \$999

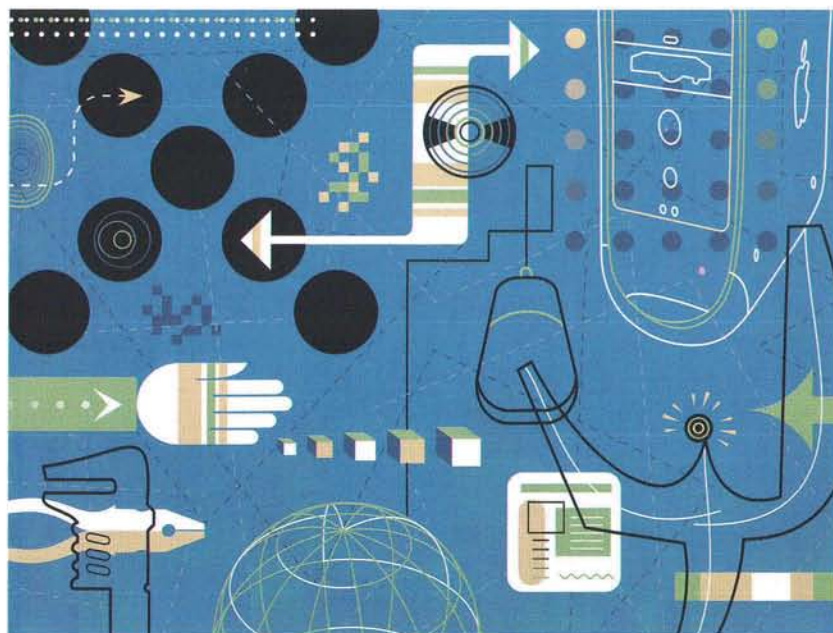
OS compatibility: Mac OS X

Company: Apple Computer, 800/692-7753, www.apple.com

the new edition; there's no upgrade path. The package consists of five CDs containing OS X, WebObjects 5 Deployment, Macintosh Manager, NetBoot, and Developer Tools.

OS X Server's documentation consists of a Getting Started card and a 250-page Admin Guide (on CD-ROM) that briefly describes only OS X Server's most popular features. We tolerated weak documentation with OS X Server's first incarnation, but Apple promised to do better this time around. Although the Admin Guide is a useful overview of *some* available services, it's a far cry from what users expect from a \$1,000 product. Missing are details on administering Apache, on activating various Web-programming tools, and on critical troubleshooting tasks such as disk recovery. Instead of providing this information, the Admin Guide directs you to the third-party document for that component, leaving you to make the leap from there to the OS X Server environment.

Installing the full product is easy—one click and it's running. Upgrading an existing OS X Server installation, however, is an ordeal. Apple provides a migration tool for



exporting user and group information, but you must offload all your own files and applications, folder by folder. You then copy them back to the same places after installing OS X Server on top of the old OS X partition, which eradicates everything that was there. Because OS X's directory structure tends to scatter user files to many obscure folders, this is a daunting task—and one that will annoy Mac users who expect the old System Folder's simplicity.

Once installed, OS X Server provides a host of improvements. The most obvious is the Aqua look and feel, which reunites the server and desktop interfaces. In fact, OS X Server is basically the desktop version of OS X with some additional components: remote server administration, Web-programming tools, advanced file and print serving, and centralized directory services. The two versions have the same core Unix operating system, but OS X Server adds performance improvements, updates to Apache Web server, and many new administrative and Web-programming tools.

The Meat and Potatoes

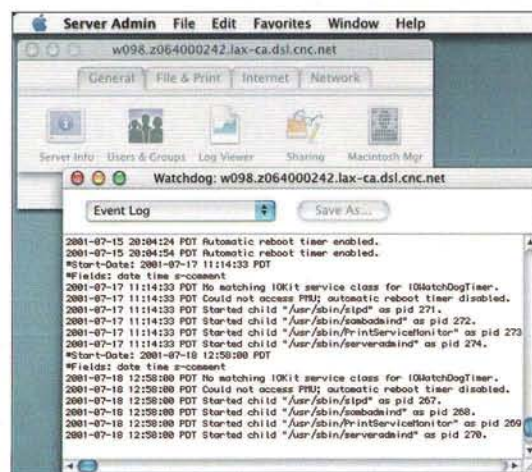
A new program called Server Admin, which runs on OS X Server or OS X (but not on OS 9), allows you to remotely configure and control Web, file, print, user, and network functions. Server Admin also lets you browse log entries and check the status of various OS X software services, and you can install it on multiple machines. Because Server Admin doesn't cover all the bases, the 10.0.1 patch added Secure Shell (SSH), an open-source utility that gives you secure, encrypted command-line access from anywhere on the Internet. But the program could do much more. For example, the only DNS function you can execute is turning DNS on or off; you can't configure it or view the contents of the DNS database. Compare this with Windows DNS, which has had a remote graphical interface for years.

Web programmers will love OS X Server's preinstalled support for the PHP 4.0.4 programming language; the MySQL 3.23 database; Java Server Pages; and WebDAV, which lets you use drag-and-drop techniques to publish Web content. These tools are enough to help you get an e-commerce site up and running without purchasing any additional software. In addition, they open up a whole world of Web applications heretofore unavailable on the Macintosh, including catalog and order processing, inventory control, scheduling, and interactive messaging—and many of these applications are free for the asking.

Several miscellaneous new features enable OS X Server to coexist with other platforms: Windows and Unix file sharing; LDAP authentication; IP filtering; a graphically configured mail server; and PostScript-compatible print serving for Mac, Windows, and Unix users. The new IP Filter function beefs up security, but it isn't as secure as a stand-alone firewall, such as SonicWall. The new mail server is just fine for light duty, but it's hardly a match for commercial OS X mail servers such as Tenon Intersystems' NetTen or Stalker Software's CommuniGate Pro (*Reviews*, September 2001). And despite OS X Server's improved server-configuration aids, Tenon's iTools still provides superior graphical configuration for Apache, SSL, and DNS.

Speeds and Feeds

When you compare the new release with OS X Server 1.2 running on identically configured Macs, you'll notice that its Aqua interface can take a bit longer to manipulate windows. However, network services, such as Web hosting and file trans-



Remote Control Mac OS X Server 10.0.4's new Server Admin application lets you remotely administer the most common server functions and view log files—useful when you need to troubleshoot from afar.

fers, seem snappier. Informal tests showed OS X Server 10.0 accommodating three to four times as many Web requests per second as version 1.2. Apple hasn't said exactly what it changed within Apache, but the server contains several new modules that the company doesn't provide source code for, and these modules may account for the speed improvements. Release 10.1, which Apple promises will be available as a free upgrade by the time you read this, is expected to significantly improve the speed of Mac OS X Server.

Macworld's Buying Advice

If you're currently running AppleShare IP without problems—and if you don't need Mac OS X's cross-platform or Internet-server features—there is little reason for you to migrate; Mac OS X Server offers minimal performance improvement over AppleShare IP. Similarly, schools or small workgroups using MacManager or OS X NetBoot won't find any major advantages in OS X Server. However, if you are rolling out Web-based applications or in need a robust Internet server, OS X Server is a good choice—as long as you have Unix-savvy technical talent who can manage to configure it using the incomplete documentation. **m**

Wireless Broadband Routers

AirPort Alternatives Let You Cut the Ethernet Cord

BY BRETT LARSON AND JASON COX

Do you want to take advantage of a wireless network while at the same time sharing your broadband Internet connection?

Thanks to a new breed of routers based on the wireless technology used in Apple's AirPort Base Station, you no longer need to purchase both a router and a Base Station to achieve this goal.

Macworld Lab tested six routers ranging in price from \$220 to \$379: the FriendlyNet FR3002AL, from Asanté; the AirStation, from Buffalo Technology; the XRouter Aero, from Macsense Connectivity; the UGate-3300, from Macsense Connectivity; the Netline Wireless Broadband Gateway, from Proxim (formerly from Farallon); and the Barricade Wireless Broadband Router, from SMC Networks. We found that while these routers generally offer significant advantages over the \$299 AirPort, they aren't right for every network; unlike the AirPort, which has

a built-in 56K modem jack, none of these routers support analog modem connections.

No Manual Labor

You set up a wireless router as you would any router: by connecting it directly to your computer and configuring it via a Web browser. We tested these routers on a network comprising a 500MHz Power Mac G4 (used to configure the routers), a Flower Power iMac, and an indigo iBook. All our machines were equipped with AirPort cards, but PowerBooks from 1999 and earlier can also use

Proxim's SkyLine Wireless PC Card (♦♦♦; www.macworld.com/2000/08/09/reviews/skyline.html) or Lucent's Orinoco PC Card Silver (♦♦♦♦; www.macworld.com/2000/06/features/cutloose_sb1.html).

All the routers we tested include either printed or PDF setup instructions; the FriendlyNet comes with both. Most of the routers offer Mac-specific setup instructions, even though setup usually takes place in a browser, making the process identical for both Macs and PCs. The exceptions are the Barricade, which nonetheless has adequate instructions for Mac setup, and the AirStation, which comes with a Windows-only setup application. Although you can set up the AirStation through a Web browser, the manual doesn't mention this. (Buffalo Technology says it plans to include Mac-specific instructions in the future.)

Configuring a wireless router isn't much more complicated than setting up a broadband Internet connection: simply enter your IP address (if it's static), DNS server IP numbers, a gateway address, and a router address. If you're using a DHCP network, check the appropriate box during the setup process, and the router will retrieve your TCP/IP information for you. If you're using a PPPoE network, setup is even easier: type in your name and password, and the router takes care of the rest.

All but one of the routers had easy-to-follow directions: the AirStation's on-screen instructions were frequently confusing. In contrast, we found that the simple, intuitive interfaces of the Netline, UGate-3300, XRouter, and FriendlyNet made for easy setup.



The MaxGate UGate-3300

Wireless Broadband Routers Compared

★ = Editors' Choice

COMPANY	PRODUCT	MOUSE RATING	COMPANY'S ESTIMATED PRICE	OS COMPATIBILITY	CONTACT	PROS	CONS
Asanté	FriendlyNet FR3002AL	★★★★½	\$379	Mac OS 9, Mac OS X	888/491-4067, www.asante.com	Upgradable wireless PC card; print server; easy setup.	Expensive; security incompatibility with AirPort card; only two ports.
Buffalo Technology	AirStation	★★	\$305	Mac OS 9, Mac OS X	800/508-1110, www.buffalotech.com	Four-port switch.	No Mac-specific instructions; expensive; not upgradable.
Macsense Connectivity	XRouter Aero	★★★★½	\$269	Mac OS 9, Mac OS X	800/642-8860, www.xsense.com	Four-port switch; easy setup.	Not upgradable.
MaxGate	UGate-3300 ★	★★★★	\$220	Mac OS 9, Mac OS X	800/284-8985, www.maxgate.net	Inexpensive; upgradable wireless PC card; easy setup.	Only two ports.
Proxim	Netline Wireless Broadband Gateway	★★★★½	\$299	Mac OS 9, Mac OS X	800/613-4954, www.proxim.com	Upgradable wireless PC card; easy setup.	Only two ports.
SMC Networks	SMC Barricade Wireless Broadband Router	★★★	\$275	Mac OS 9, Mac OS X	888/838-9247, www.smc.com	Three ports.	Not upgradable.

Using both Mac OS 9.1 and Mac OS X, we tested the wireless routers by performing a variety of activities: FTP downloads, checking e-mail, surfing the Web, and sharing files (via AppleTalk and AFP). In all our tests, the routers worked well and presented no problems.

Airborne Advantages

The six routers we tested have one significant advantage over the AirPort Base Station: each includes at least two Ethernet ports. Having two ports means that you can use one for your Internet connection and one for your local network, keeping the two connections on separate lines for better security.

The Barricade has a third port, and the AirStation and XRouter have a built-in four-port 10/100 switch. With the additional Ethernet ports, you can network older Macs via Ethernet and new Macs via AirPort, even if you have a cable modem or DSL—something you can do with AirPort and the two-port routers only if you buy an Ethernet hub.

A distinct advantage of the Netline, the FriendlyNet, and the UGate-3300 is that they're all easy to upgrade. Each has a built-in PC slot that holds a removable 11 Mbps wireless networking card: the Netline comes with a Proxim SkyLine Wireless PC Card; the FriendlyNet, with an AeroLAN card; and the UGate-3300, with an Intersil Prism card.

Because the PC Card determines your maximum network speed, you'll need to purchase only a new PC Card, rather than a whole new router, to take advantage of higher network speeds. And using a PC Card doesn't give these routers significantly less range than that of the Barricade and the XRouter, which both sport antennae. (Buffalo Technology sells an \$80 antenna for the AirStation to extend its range.)

The FriendlyNet has a unique feature that rids your Mac of one more cable: a built-in, Mac-compatible print server. Although the UGate also has a print server, it doesn't support Macs.

Security Alert

Be forewarned: whenever you're using a wireless router, your data is essentially up for grabs. These routers need to encrypt data to protect it from any prying eyes within range. The Netline, the UGate-3300, and the FriendlyNet offer 128-bit encryption; the Barricade and the AirStation follow, with 64-bit encryption. The XRouter offers the same 40-bit encryption as the AirPort Base Station. While all these encryption levels are sufficient to discourage the casual eavesdropper, none offers true

security. If you routinely transfer highly sensitive information, a wireless router—even one that adheres to the most current security standards—is probably not for you.

The FriendlyNet suffers from a security incompatibility with the Apple AirPort card. Because the router and card process the WEP (Wired Equivalent Privacy) protocol Security Key differently, the card doesn't recognize the key you enter and leaves your data unencrypted. Although the manual recommends disabling security features on both the card and the router so they can be used together, there's an easy workaround: type a \$ sign before the security key for the router and the AirPort card.

Macworld's Buying Advice

Whether you're adding wireless technology to an existing network or setting up your first network, MaxGate's UGate-3300 is an excellent choice; it offers a high level of encryption and upgradability at an exceptional price. If you need to network old and new Macs together, Macsense Connectivity's XRouter Aero is a good option; through its built-in four-port 10/100 switch, even Macs without AirPort cards can join the network. **m**

More Info:

www.macworld.com/2000/06/features/cutloose.html

Read our collection of tips on getting the most from Apple's AirPort technology.

More Info:

www.macworld.com/2001/05/features/modern.html

Our feature "Your High-Tech Home" compares the wired life with the wireless.

Adobe PageMaker 7.0

A Single, Flawed New Feature Makes for a Forgettable Upgrade

BY GALEN GRUMAN

For Adobe PageMaker users, 7 is *not* a lucky number. Instead, it's a false promise of a major revision to the company's former flagship publishing standard. The new Adobe PageMaker 7.0 is simply the almost five-year-old PageMaker 6.5 with a few file-format updates, as well as a quirky new data-merge plug-in.

Obvious Updates

Version 7.0's file-format updates are what you'd expect: Microsoft Word 2001, Adobe Illustrator 9, and Adobe Photoshop 6. The ability to import PDF files, on the other hand, is a great addition, and the import filter alerts you to font, color, and separation issues. The inclusion of Distiller 5 for creating PDF files is also welcome, as is tighter integration of the PDF tools with PageMaker's export interface.

But PageMaker's most hyped new feature, the data-merge plug-in, is a huge disappointment. Although it lets you import graphics and text—to create mail-merged letters and simple catalogs from any comma-delimited text file—it's quirky and maddening to use.

Creating a data form is simple: you select the data file from the plug-in's palette, and it reads the first row of data to determine the field names. A field name that begins with the @ character indicates the name of an

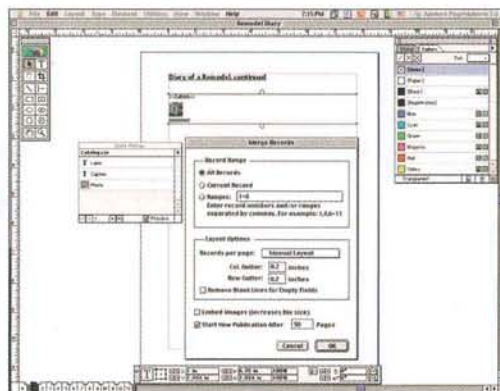
image file to be imported. Unfortunately, you can't use a dialog box to choose the folder or drive containing the file to be imported; instead, you must type something like **Mac Start:Real Estate Project:Photos:123 Broad St.tif**. Be careful—one typo, and your file won't import. You also need to be careful when merging records, since PageMaker puts each record on its own page by default.

The actual import works well enough, as long as your PageMaker document has nothing else in it. When I tried to merge data into a PageMaker document containing other text and images, PageMaker 7.0 went haywire and copied the entire document at the beginning of each record. Adobe says the data-merge tool is intended only for mail merges, where an entire letter is duplicated with a unique name and address in each copy.

The Rest of the Story

PageMaker 7.0 is nearly identical to version 6.5 (★★★; www.macworld.com/1997/05/reviews/3659.html), whose big push was online publishing. However, those features were difficult to use and produced mediocre Web pages, and they're no better in version 7.0.

Beyond offering neither substantive new features nor fixes for long-time defects such as its separate, inadequate table editor, PageMaker 7.0 has a few other flaws. For one, it's a memory hog. While version 6.5 needed between 9MB and 20MB of RAM, the default minimum and preferred memory settings for version 7.0 are 15MB and 32MB, respectively. But even with those settings, I got frequent memory errors. And Adobe has no plans to Carbonize PageMaker 7.0 (though I had no trouble using version 7.0 in Mac OS X's Classic mode).



Basic Database Publishing PageMaker 7.0's new data-merge feature lets you create basic catalogs—but only if the document is otherwise totally empty.

Macworld's Buying Advice

Compared with QuarkXPress and Adobe InDesign, PageMaker is labor-intensive, so it's best suited to basic jobs involving simple designs and few pages. If your goal is to produce documents that look as though they were created in something more capable than a word processor but that don't require the high level of design that QuarkXPress and InDesign offer, PageMaker may be all you need—just beware the pitfalls of the new data-merge tool. **m**

ADOBE PAGEMAKER 7.0

Rating: ★★★

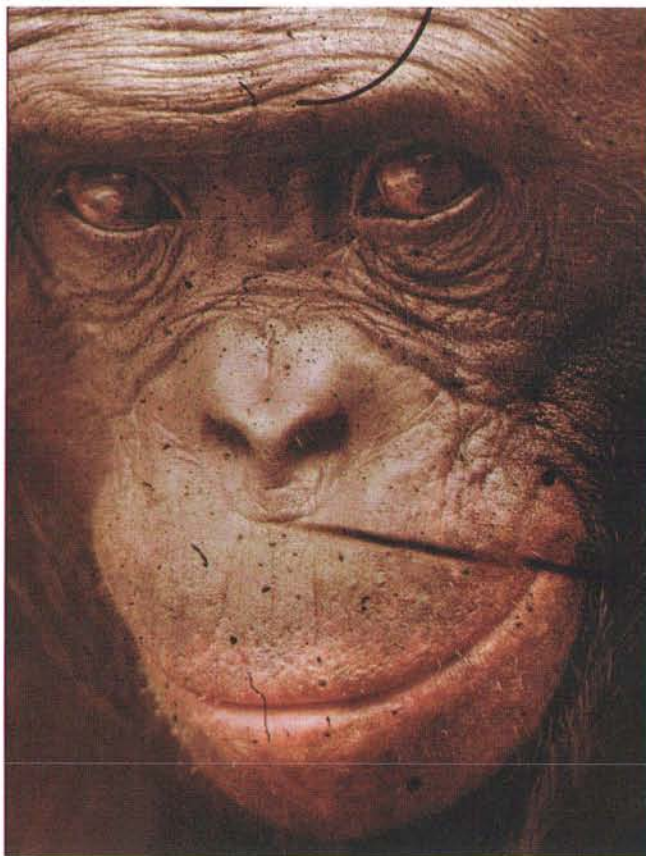
Pros: Enhanced PDF import and export.

Cons: Few notable enhancements; quirky data-merge tool.

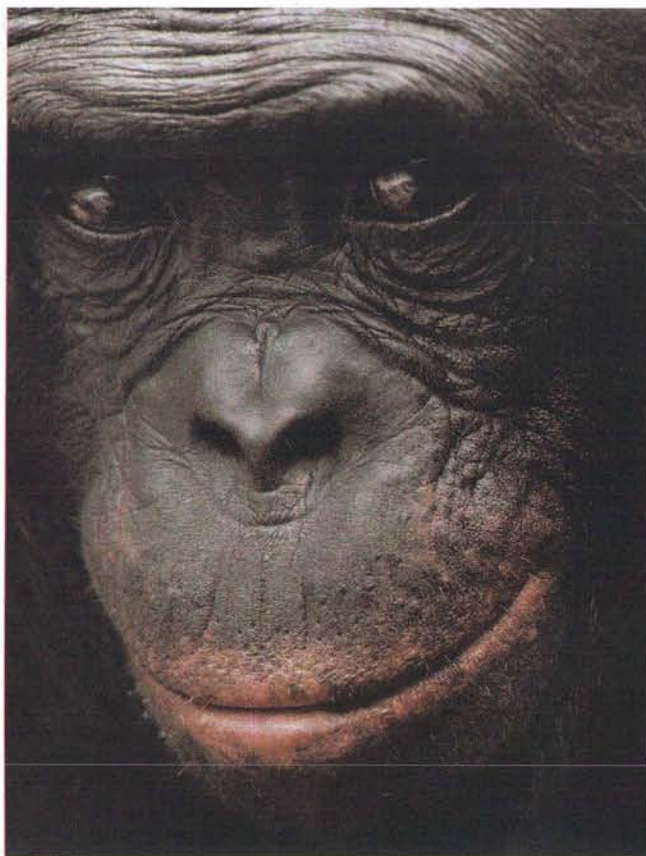
Company's estimated price: \$499; upgrade, from \$79

OS compatibility: Mac OS 9

Company: Adobe Systems, 800/833-6687, www.adobe.com



Before



After

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Outlook 2001

Mail Client Gets Mac and Windows Users in Sync

BY MEL BECKMAN

Macintosh users in a Microsoft Exchange community fight a constant uphill battle for compatibility with their Windows-based neighbors. Until just recently, Mac users could barely exchange formatted e-mail messages with Windows Outlook users, let alone participate in the rich traffic of Exchange calendars, meet-

ings, task and contact lists, notes, and document archives enjoyed by their Windows colleagues.

Those days are over. Microsoft Outlook for Mac 2001 offers feature parity with the Windows version, letting Mac users participate in group scheduling, share address books, collaborate on projects, and publish documents. It even has a few features—such as drag-and-drop copying and easy setup—that Outlook for Windows doesn't, and the Mac interface makes this version more user friendly than its Windows counterpart. There are only two real disappointments: Outlook 2001 doesn't run natively in Mac OS X—you can run it in OS X's Classic mode, but performance suffers—and it requires Microsoft Exchange Server.

Improved Interface

Outlook 2001 is easy to install: simply drag the application folder from

the CD to your hard drive, and the program self-installs when you first launch it. A startup wizard walks you through the initial configuration, offering context-sensitive troubleshooting advice if things go awry.

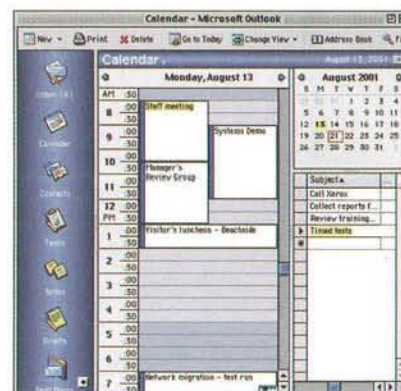
Once launched, Outlook presents a single multipaned window displaying mail, calendars, contacts, and other Exchange resources. Overall, the new interface is very pleasing, even though it lacks the Aqua sheen that users are starting to expect. And Mac-friendly features abound: message-preview zooming magnifies those insanely tiny Windows fonts, for example, and the Mac's Keychain security feature saves your password for you. Interactive documentation via the program's Mac Help Center puts how-to information at your fingertips.

Behind the slick interface, Microsoft has added a mountain of new capabilities. A full-featured calendar keeps track of appointments and lets you share them with others. You can have calendar items sent automatically to other Outlook users and create public calendars for jointly managing vacation or project schedules.

A meeting planner helps you arrange meetings with multiple users. You choose several users from an address book, display a consolidated view of all their schedules, and select a compatible time or let Outlook 2001 choose one for you. All invitees

get an e-mail message about the suggested time, which they can confirm or, with permission, reschedule.

Shared folders let you delegate management of some or all of your Outlook functions to another person. A feature unique to Outlook 2001 for Mac is the Sharing Panel, which consolidates permission controls for all Outlook functions in a single dialog box; Windows users must click through dozens of windows to configure sharing and delegation.



It's a Date Outlook 2001 lets you share schedules with other Exchange users.

Beyond the lack of native OS X support, one minor omission remains: HTML mail formatting. Outlook 2001 converts incoming HTML messages to RTF format and doesn't let you compose HTML mail messages. Windows users don't suffer these limitations.

Macworld's Buying Advice

Outlook 2001 is elegant and responsive in Mac OS 9, but it drags somewhat in OS X's Classic mode, and the user interface isn't up to Aqua standards. Still, if you're living in a Microsoft Exchange corporate culture, you have to get along—and with Outlook 2001, you finally can. **m**

OUTLOOK 2001

Rating: ★★½

Pros: Fully compatible with Exchange Server; folder sharing; clean interface.

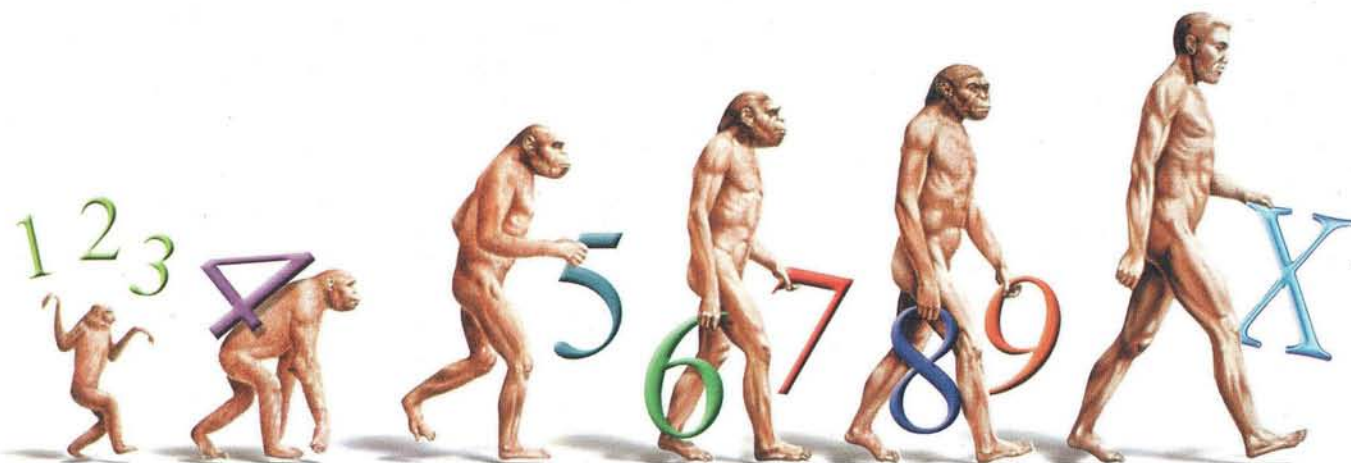
Cons: No support for HTML mail formatting.

Company's estimated price: free

OS compatibility: Mac OS 9

Company: Microsoft, 888/218-5617, www.microsoft.com/mac

One Evolution Deserves Another



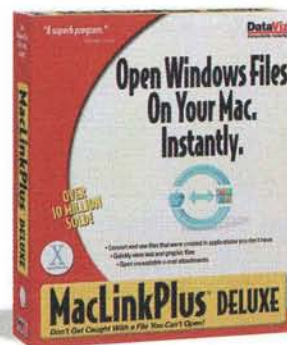
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Panorama 4.0

Speedy RAM-Based Database Goes Cross-Platform

BY GEOFF DUNCAN

ProVue Development's Panorama has been hailed as a speedy, flexible database since its 1988 debut. With version 4.0, Panorama is finally native to Windows and PowerPC (though not to Mac OS X), so you can now easily share Panorama databases with PC-using colleagues. Panorama 4.0 may be the ultimate relational

database for your desktop—as long as you don't need extensive work-group or Web-publishing features.

Thanks for the Memory

Panorama has always blown away competing products, such as FileMaker Pro and 4D, in the performance department, because it keeps data in RAM instead of constantly shuffling information on your hard drive. Searching, sorting, and replacing are amazingly fast, even in huge databases: searching more than a million Web-server log entries for a unique record took less than half a second on a beige Power Mac G3/300.

FileMaker Pro may be lauded for its easy database-form creation, but that program's results have nothing on Panorama's user-friendly databases. These databases' interface tools are powerful and flexible, and they're fully relational, so you can link multiple

databases to better manage and organize your information. Swift cross-tab and summary features encourage you to analyze your data more deeply.

New wizards help you create databases, enter complex formulas, edit form and window properties, manage fonts, and more. You can use AppleScript to communicate with other applications or to trigger procedures written in Panorama's built-in programming language. Panorama 4.0 also provides comprehensive documentation in the form of well-written PDF files and QuickTime video demos.

Age before Beauty

Panorama may be powerful, but it's showing its age. For example, dialog boxes are modal and immobile—you can't switch to another application or online help while one is open; nor can you move a dialog box to reveal information in other windows. Objects remain limited to a palette of 256 oversaturated colors, and many features seem to have been tossed into the program rather than thoughtfully designed; some are easily accessible, while others can be reached only via a modal dialog box.

Panorama 3.0 introduced the capability to share databases (and subsets of databases) among multiple

users via Everywhere's Butler SQL. Panorama 4.0 has this capability, but Butler has been a dead product since Pervasive Software acquired Everywhere in 1998. ProVue plans to introduce a new server for sharing Panorama databases, but until then, Butler is the only means of enabling multiuser access.

And while Panorama's speed and flexibility could someday make it a fantastic Web-enabled-database program, it still has no built-in Web-



Speed and Depth Panorama 4.0 lets you create fast relational databases with sophisticated interfaces.

publishing capabilities and can't be used with middleware such as Blue World Communications' Lasso.

Macworld's Buying Advice

Although Panorama 4.0's age makes it a little eccentric, the program lets you create powerful databases whose interfaces, features, and performance blow FileMaker Pro out of the water. The only real drawbacks are the absence of Web-publishing options and the fact that multiuser access is currently available only by way of a defunct SQL database product. **m**

PANORAMA 4.0

Rating: ★★★★★

Pros: Powerful, flexible desktop database with unbeatable performance.

Cons: Moribund groupware capability; no Web-publishing features.

Company's estimated price: \$300; upgrade, \$70

OS compatibility: Mac OS 9

Company: ProVue Development, 800/966-7878, www.provue.com

Monochrome Handhelds

Palm m500 and Handspring Visor Edge Offer Light, Portable Power

BY DAVID WEISS

The handheld computers of today pack considerable power relative to their size. The Handspring Visor Edge and the Palm m500 are two of the smallest handhelds available, and they're similar in many respects, though the Edge offers better connectivity and the m500 has a more compact, ergonomic design.

A Stylish Pair

Both PDAs are decked out in silver brushed aluminum; the Edge is also available in red and blue tints. And both are quite svelte, measuring only a half inch thick. However, at about five inches tall, the Edge is a good half inch taller than the m500. The Edge weighs almost five ounces, while the m500 weighs an even four ounces.

The m500 has a leather cover that folds back, and you can attach it to either side of the PDA; the stylus slips into a groove on whichever side is free, making the m500 friendly to lefties. In contrast, the Edge's stylus fits only on the right side, and it clips onto the outside of the handheld, adding bulk. Further increasing the Edge's girth are a hinge that sticks out and a lid that doesn't fold back.

Both handhelds have illuminated power buttons, which can be set to

blink when you need a silent alarm, and the m500 can be set to vibrate. Both have screens that are easy to read indoors or in sunlight, and both offer reverse backlighting.

On the inside, these PDAs are almost identical. Each ships with 8MB of RAM, a 33MHz Dragonball VZ processor, an infrared port, a rechargeable battery, and a USB cradle.

Reaching Out


Via the USB-cradle port, both handhelds can connect with modems, keyboards, and other peripherals, and both offer additional expansion possibilities. The Edge can connect to SpringBoard modules—including GPS receivers, MP3 players, storage media, and even cell phones—via an included snap-on adapter.

In contrast, the m500 has a slot for SD (Secure Digital) cards for adding storage or content. SD cards don't require an adapter and are about the size of a postage stamp. No hardware peripherals are available yet for the SD slot, but a few are in development.

The Software Factor

The m500 ships with Palm OS 4.0, which lets you password-protect your handheld, encrypt records,

HANDSPRING VISOR EDGE

Rating:  4 1/2

Pros: Less expensive than the m500; works with a wide variety of peripherals; blinking alarm.

Cons: Larger than the m500; expansion-module adapter adds to girth.

Company's estimated price: \$299

OS compatibility: Mac OS 9

Company: Handspring, 888/565-9393, www.handspring.com

PALM M500

Rating:  4 1/2

Pros: SD-card slot; vibrating, blinking alarm; more compact than the Edge.

Cons: Expensive; no peripherals yet available for SD-card slot.

Company's estimated price: \$399

OS compatibility: Mac OS 9

Company: Palm, 800/881-7256, www.palm.com

and connect your handheld to a cell phone for wireless e-mail and Web access. The Edge ships with Palm OS 3.5.2H2, and although users can't upgrade to Palm OS 4.0, version 3.5.2H2 offers all the basic features of its successor.

Palm Desktop, the Mac software that ships with both handhelds, runs in Mac OS X's Classic mode, but an upcoming OS X-native version will be available as a free download.

Macworld's Buying Advice

These two handhelds are light, powerful, slim, and Mac friendly. If you like the options that a SpringBoard slot affords and don't mind a little extra bulk, go for the less expensive Handspring Visor Edge. Otherwise, go with the Palm m500—it's smaller and has an ambidextrous design. **m**



The Handspring Visor Edge (left) and the Palm m500

SCOTT PETERSON

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Matrox RTMac

Video Card Enhances Apple's Final Cut Pro

ARE YOU BUILDING an editing system around Apple's Final Cut Pro?

Check out Matrox's RTMac, a \$999 PCI expansion card that kills three video-editing birds with one stone: it allows real-time display of many common transitions and effects, digitizes analog video and audio, and lets you connect a second monitor to your Mac.

The RTMac card boasts two connectors. The first one accommodates a standard VGA monitor, for extending your desktop, and the second one attaches to a breakout box that provides inputs and outputs for S-Video, composite video, and analog audio. If you like, you can connect the video output to a TV monitor to preview your projects. You can also capture analog video and audio using the analog inputs.

The RTMac doesn't accelerate every Final Cut Pro transition, but it will handle cross dissolves, wipes, and slides, among others. The card also accelerates motion and distortion effects, as well as Final Cut Pro's text generators.

Stumbling Blocks

The card delivers immediate gratification when you need it most: during the editing and polishing phases. But when it's time to output a final project to a DV device, you must render

Rating: ★★★

Pros: Real-time display of common effects and transitions; analog-video and -audio capture; can drive second monitor.

Cons: Outputting to DV requires rendering; causes Mac OS X instability.

Company's estimated price: \$999

OS compatibility: Mac OS 9

Company: Matrox, 800/361-4903, www.matrox.com

all effects. (Alternatively, you can connect your deck to the breakout box and record from its analog outputs; however, this can compromise the video quality.)

And there are other limitations: Complex composites require rendering; the RTMac can't handle more than two video tracks and one title—or two titles and one video track—in real time. Clips with motion blur applied must also be rendered. And for now, the RTMac works only with Final Cut Pro; a software update that enables the card to work with Adobe Premiere should be available by the time you read this.

In addition, the RTMac card causes Mac OS X to be unstable and crash—this is a serious problem if you switch between OS 9 and OS X. As we went to press, Matrox was putting the final touches on a free software update designed to address the problem.

Macworld's Buying Advice

Although Matrox's RTMac won't turn your G4 machine into a real-time compositing powerhouse, it is a huge productivity booster. And its analog-capture features and ability

to drive a second monitor are icing on the cake. Despite some flaws, the RTMac packs a lot of value for its price.—JIM HEID



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If I wanted to keep books all day, I'd have been an accountant.



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One of 400,000 MYOB software users

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ETShade Pro R4/E

An Uncomplicated Approach to 3-D

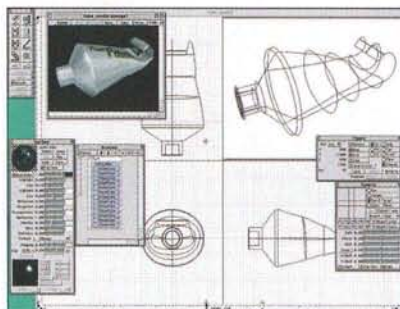
THE LATEST ANIMATION EXPORT from Japan isn't a movie starring cute creatures with magical powers, but you could *make* such a movie with ETShade Pro R4/E, from Japan-based ExpressionTools. This 3-D-modeling, -rendering, and -animation program simplifies the production process more than its closest competitor, Eovia's Amapi 3D (*Reviews*, October 2001), does. But ETShade is limited compared with the more powerful—albeit more expensive—NewTek LightWave and Maxon Cinema 4D.

Keeping It Simple

ETShade's modeling tools generate 3-D objects from simple Bézier curves. Working with these splines is similar to editing curved objects in Adobe Illustrator; in fact, ETShade imports EPS files from Illustrator, as well as files in DXF and LightWave format. The program's straightforward interface simplifies the learning process for 3-D novices, although its reliance on a multitude of floating palettes creates annoying screen clutter.

To form 3-D shapes, you group splines into a curved surface and then convert curved-surface objects into polygons at whatever resolution you choose. ETShade is intelligent enough to insert splines automatically after you add new points to a curve.

Although ETShade's animation tools are logical, they're a bit uncon-



Group Effort ETShade Pro R4/E generates curved surfaces from groups of splines.

ventional. The program relies on objects called Joints; they're the only objects you can animate, so anything that moves in a scene must be linked to them. This approach makes sense for character animation, but it means that correctly setting up mechanical animations requires extra work. A major fault in ETShade's animation tools is the absence of curve-tangent handles on keyframes; the program offers only Slow In/Slow Out adjustment sliders.

ETShade's Phong shader is quick but doesn't render shadows, making it impractical for creating final images. Two ray-tracing modes produce stunning images, but at print or video resolution they take three or four times as long as the Phong shader to render.

Macworld's Buying Advice

ETShade Pro R4/E's ease of use and gentle learning curve make it a great beginner's tool for 3-D novices. (Amapi 3D offers more modeling features and costs half as much, but it's more difficult to learn.) If you're a 3-D professional, you'll appreciate ETShade's rapid modeling and simple workflow for quick-turnaround projects, though you may find its animation tools lacking. But if you use OS X, you'll have to wait until at least the end of the year for a Carbonized version.—MATT LOWRIE

Rating: ★★★

Pros: Easy to learn and use; high-quality renderings.

Cons: Cluttered interface; limited animation tools; expensive.

Company's estimated price: \$1,399

OS compatibility: Mac OS 9

Company: ExpressionTools,
info@expressiontools.com,
www.expressiontools.com

ONLINE REVIEWS

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LINK

MP3 software

- ★★★ Audion 2.5
- ★★★½ Cabrio 1.1.2
- ★★★½ Macast 1.0
- ★★★½ MusicMatch 2.0.1

Instructional software

- ★★★½ Break It, Fix It, Ride It

3-D modeling software

- ★★★ GollyGee Blocks

Multimedia software

- ★★★½ Kid Pix Deluxe 3.0

Input device

- ★★★½ Kensington Turbo Mouse Pro

Database software

- ★★★ ComicBase 6.0

Statistics software

- ★★★ InStat 3.0

External modem

- ★★★½ Actiontec 56K USB
Call Waiting Modem

USB flash storage

- ★ Flash USBDrive 16MB
- ★★★ Q. USB 16MB

Reviews You Can Trust

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VERY GOOD: ★★★★
GOOD: ★★★
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WebMerge 1.6

Generate Web Sites from Databases—in a Hurry

DATABASES ARE GREAT PLACES TO stash information, and the Web is a great place to publish databases. Yet the options for translating a database's contents into Web pages have been extremely limited. Fourth World Media's WebMerge 1.6.2 changes the equation. This inexpensive program takes the contents of any database that can be exported as Merge or tab-delimited files (including FileMaker

Pro and Microsoft Excel documents) and converts those contents into standard Web pages.

WebMerge creates an individual Web page, based on an HTML template you can make using any Web authoring program, for each record in the file you export. You simply add a special tag to the Web page's code wherever you want WebMerge to insert content from the database (though you can't add logic, such as IF-THEN statements, to templates).

While the static pages WebMerge creates are snapshots of your database rather than a live look at its contents, the program makes it fast and easy to regenerate pages whenever your data changes. Best of all, redesigning your site is as easy as editing the template file and then regenerating the pages.

Rating: ★★★★★

Pros: Straightforward interface; easy-to-create templates; fast.

Cons: No IF-THEN support in templates.

Company's estimated price: \$69

OS compatibility: Mac OS 9

Company: Fourth World Media, 800/288-5825, www.fourthworld.com



Site Generator WebMerge's single-pane interface is remarkably easy to use.

Macworld's Buying Advice

If you have vital information trapped inside a database application, you may well find that WebMerge is an incredibly quick and easy tool for freeing your data and putting it on the Web.—JASON SNELL

DiskWarrior® has than



1999 Macworld Editors' Choice Awards Winner, Utility Software. "DiskWarrior is an excellent ax to add to your disk-repair and -maintenance arsenal. DiskWarrior's ease of use, speed, and new method of fixing disk problems make it a powerful disk-maintenance product."



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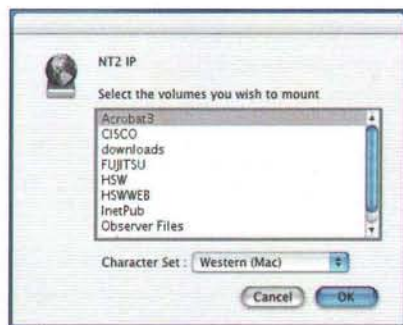
Windows IP Print and File Server Doubles Transfer Speeds

THE MACINTOSH FILE-SHARING service built into Windows transfers files very slowly compared with Windows' native file sharing. Group Logic's Extreme Z-IP 2.01 more than doubles TCP/IP file-transfer speeds for Mac OS 9 and OS X users and makes server access easier as well (although

Apple's promised Windows file-sharing support in OS X 10.1 may relegate Extreme Z-IP to OS 9 systems).

Extreme Z-IP runs under Windows NT 4.0 or Windows 2000 Server or Professional (the workstation edition) to provide file and printer sharing via TCP/IP. The program lets Mac users share any Windows directory or—with the optional printer-sharing component, which starts at \$675 for ten users—any Windows printer.

Once it's running on a Windows server, Extreme Z-IP lets Mac users see each Windows share as a separate volume in the Chooser or Network Browser. It uses Server Location Protocol to let Mac users choose from a list of available servers, and it supports long- and encrypted-password authentication.



Looks Like a Mac Server Extreme Z-IP's interface looks like any other Mac server's.

Rating: ★★½

Pros: Fast; uses Server Location Protocol; good password support.

Cons: Pricey Server edition; optional print function costs extra.

Company's estimated price: Server edition, from \$1,175 for ten users; Workstation edition, from \$295 for three users

OS compatibility: Mac OS 9, Mac OS X

Company: Group Logic, 800/476-8781, www.grouplogic.com

Macworld's Buying Advice

Extreme Z-IP's Server edition is pricey, but it speeds file transfers by at least 100 percent and costs much less than upgrading to Windows 2000 Server. Small groups can run the Workstation edition on the less expensive Windows 2000 Professional.—MEL BECKMAN

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SnapMail 3.0

Intraoffice E-mail Made Quick and Easy

NOT EVERYONE NEEDS INTERNET e-mail; sometimes you simply want to exchange messages with other users on your LAN without the complexities of Internet addressing and the dangers of Internet mail viruses. Glass Bead Software's SnapMail 3.0.4 fills the bill for Mac networks, offering an interface even novices will find

Rating: ★★★★★

Pros: Easy to use; requires no server; voice messaging; real-time chat.

Cons: No nested folders; no filtering.

Company's estimated price: from \$150 for five users to \$2,990 for unlimited users

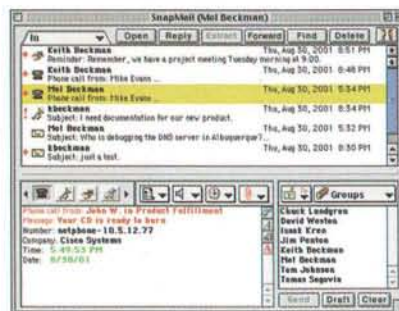
OS compatibility: Mac OS 9

Company: Glass Bead Software, 978/263-9956, www.glassbead.com

easy to use and slick features such as real-time voice and text chat.

SnapMail runs on AppleTalk networks and it requires no centralized server. You install the program on each user's computer, and SnapMail discovers users and adds them to its address book. In addition to the usual e-mail features, such as message folders and text formatting, SnapMail adds some unique twists: reminder messages, customizable form templates, a public bulletin board, and real-time text chat. (An Internet mail gateway is available; it's \$97 for five users.)

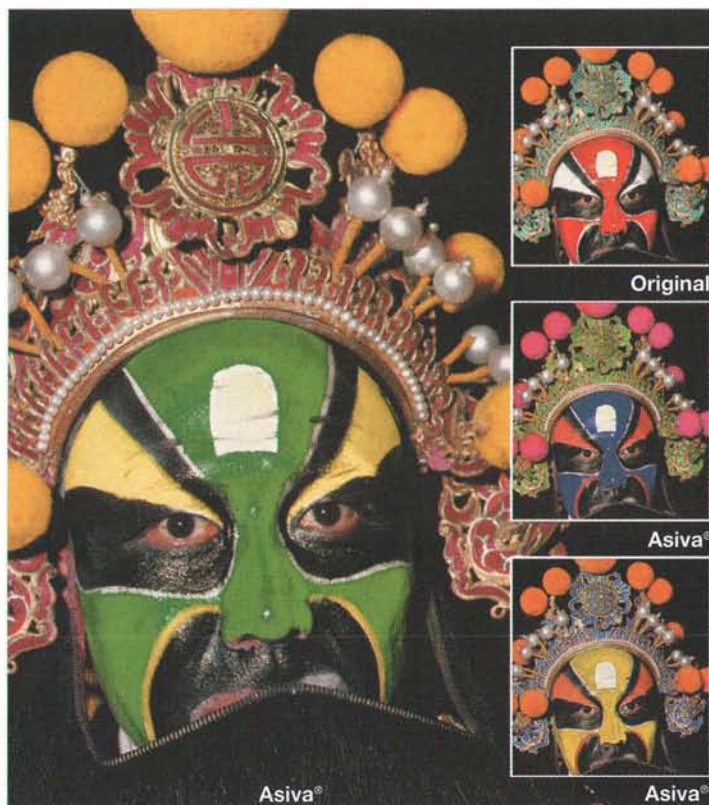
Although SnapMail is fast and intuitive, it lacks two useful features of traditional Internet mail clients—nested folders and message filtering—that help organize saved messages.



Forms Add Function SnapMail lets you standardize intraoffice communications.

Macworld's Buying Advice

If you need fast, easy, and convenient intraoffice messaging without the encumbrances and risks of Internet e-mail, SnapMail is for you. Its ability to operate without a central server keeps it running even when the Internet is down.—MEL BECKMAN



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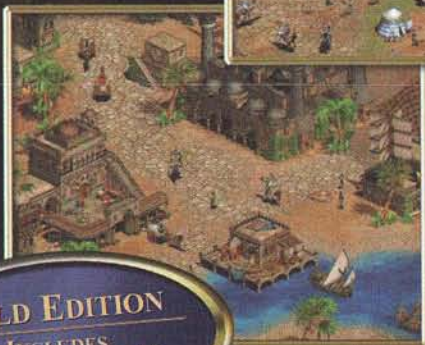
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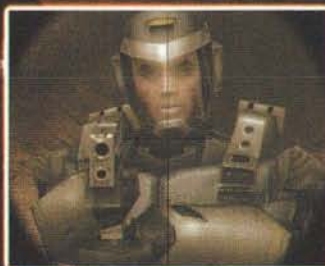
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The Game Room

It's no wonder so-called god games are so very popular—they let you control entire worlds and huge populations of people (or creatures) according to your every whim. I admit, some of my darkest hours as the reigning dictator of the game *Tropico* were dominated by dreams of total control. Cast as El Presidente of a small Caribbean nation, I found the illusion of omnipotence going to my head.

Tropico is the latest title from PopTop Software (makers of *Railroad Tycoon II*), and it's published by MacSoft. It's a real-time strategy game with a 3-D isometric view (or three-quarters perspective).

Banana Republic

Tropico puts an interesting twist on the god-game genre. Rather than having you act as a deity or an industrial tycoon, you're the dictator of a banana republic. No, not the chain of clothing stores, silly—this banana republic is an island in the Caribbean. As *Tropico* emerges from colonial obscurity after World War II, your puppet regime must stay in power through whatever means—democratic or fascistic—you choose.

What makes *Tropico* different from so many other simulation games is that, in addition to influencing economics and planning infrastructure, you must manage the political process of your country. Getting your country running is only one problem you'll face as El Presidente—keeping it running is another issue entirely.

In *Tropico*, you can either use a series of preset scenarios with specific goals (guaranteeing fair elections while maintaining power, or undercutting Cuba's cigar-export business) or create a custom island of your own—determining its altitude, waterline, distribution of vegetation and minerals, political stability, and population.

You can also customize your personality as a ruler, assigning yourself positive traits (hardworking, a man of the people) and negative traits (alcoholic, flatulent). The



Benevolent Dictatorship In *Tropico*, you must provide for your people by building farms, schools, industry, and more.

game's designers ensure that you're consistent—making yourself ugly, for example, precludes making yourself charismatic. These traits will affect everything from how the average José on the street sees you to how adept you are at foreign policy. As in the case of flatulence, say, a trait can even affect how much your palace guards are paid to protect you.

Despite such omnipotence over your environment, you're no Svengali—you don't directly control what your Tropicans

think and do. But you can certainly influence them through your actions (or inaction, as the case may be). Fail to build housing, schools, or clinics for your populace, for example, and you risk the wrath of socialist factions. Place too heavy an emphasis on industrial or commercial development without taking steps to beautify *Tropico* and reduce pollution, and you'll incite environmentalists to rally against you. Fail to build and maintain a strong military presence, and you may be ousted by a junta. Meanwhile, you must try to balance effective relationships with the outside world, keeping both *los yanquis* and *los comunistas* at bay.

Absolute Power Corrupts Absolutely

Of course as El Presidente, you don't necessarily have to play by the rules. Heck, you can make the rules. If the people demand an election, do you have to listen to them? No! At least, not for a while. And even when you do grant one, you can hire a team of "specialists" to make sure the

continues

election results are in your favor. Having trouble with a particular insurgent who threatens the stability of your regime? You can make the insurgent disappear, but you'll have to pay for it (and the respect you lose will be damaging).

Other problems are not as easy to solve. If you're serious about making Tropicó a better place to live, you'll have to invest extensively in improvements to the tiny country's infrastructure. You will need to plant crops that can be sold or turned into lucrative export goods, such as rum and cigars. You'll need to exploit local resources, such as mines.

As Tropicó's citizens grow more sophisticated, they'll expect more from you. They'll want better pay. They'll want to live in houses and apartment buildings rather than squalid shacks. You'll need to build them schools, universities, power plants, and bigger and better sources of entertainment. And you may even want to consider underwriting the development of hotels, spas, and resort locations to bring in tourist dollars.

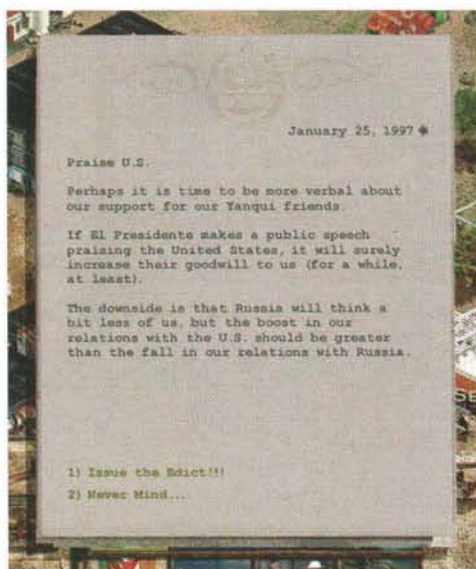
Of course, you don't have to go the humanitarian route, and for some, this is what makes Tropicó so appealing. You can exploit almost every element of Tropicó for your personal interest. You can divert money to a private Swiss bank account. You can keep the population under your thumb by imposing martial law and issuing draconian edicts that make it dangerous for the average *ciudadano de Tropicó* to step out of line. In Tropicó, it's all up to you.

Muy Fácil

Games as complex as Tropicó can be intimidating for first-time players. The many tasks to perform and factors to observe can overwhelm. PopTop strongly recommends that first-time players utilize the built-in tutorial, and I heartily agree. The voice of an obsequious crony assists you in understanding the basic game-play mechanics and the interface, and then invites you to experiment with a preset island scenario.

Tropicó also comes with a well-written manual that thoroughly explains the game's major elements and provides helpful tables explaining how it works. It even includes brief biographies of famous dictators such as Rafael Trujillo Molina (Dominican Republic) and Manuel Noriega (Panama).

Another suggestion for first-time Tropicó dictators is to play your first games in Sandbox mode. You create a custom scenario by lowering the political difficulty to virtually nil and providing yourself with unlimited funds. This way, you can familiarize yourself with the mechanics



Send the Right Message Tropicó mixes political intrigue with Sim City-style building.

of the game and learn what works and what doesn't. If not for Tropicó's Sandbox mode, I'd never have found out how lucrative a rum distillery can be or how long it can take one to turn a profit.

Thoroughly Modern Regime

Tropicó is MacSoft's first game to ship with Mac OS X support—it's been Carbonized, and it worked adequately on my G4/500 running Mac OS X 10.0.4.

Tropicó supports hardware-based graphics acceleration, so if you have an OpenGL-compatible video card, you'll get smoother graphics and richer colors. But if you don't have a video card that can run Tropicó in hardware mode, game play isn't diminished

at all—the graphics are detailed and beautifully done even with the software renderer.

Tropicó has no online-play component, but that's a minor shortcoming. The game is fully absorbing, and it's a lot of fun even without death matches.

I did have a few problems with Tropicó. In Mac OS 9, the game quit on me twice with out-of-memory errors, even though I allocated an appropriate amount of RAM to it. (Be sure to save your game often.) Tropicó's speed is also underwhelming in spots, even on a Mac that exceeds the company's minimum recommended system configuration.

¡Viva Tropicó!

Every so often, I find a game that I fear I'll have to delete from my hard drive, lest I suffer a major productivity hit. Tropicó is just that sort of game. I lose hours playing, oblivious to the outside world as I tend carefully to *mi país, mi Tropicó*. If you're a fan of simulation games, you should definitely plan a vacation to Tropicó. **m**

Tropicó dictator PETER COHEN is normally a mild-mannered senior editor at MacCentral, where the job of dictator is already filled.

Visit www.macworld.com/ubb/Forum25/HTML/000161.html to comment.

TROPICO

Rating: ★★★★★ 1/2

Pros: Lots of detail to keep armchair dictators happy; tons of replay value, due to built-in and custom scenarios.

Cons: Big or complicated maps slow it down; crashes sometimes.

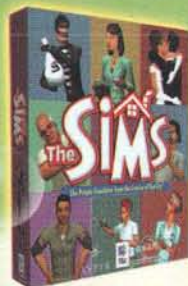
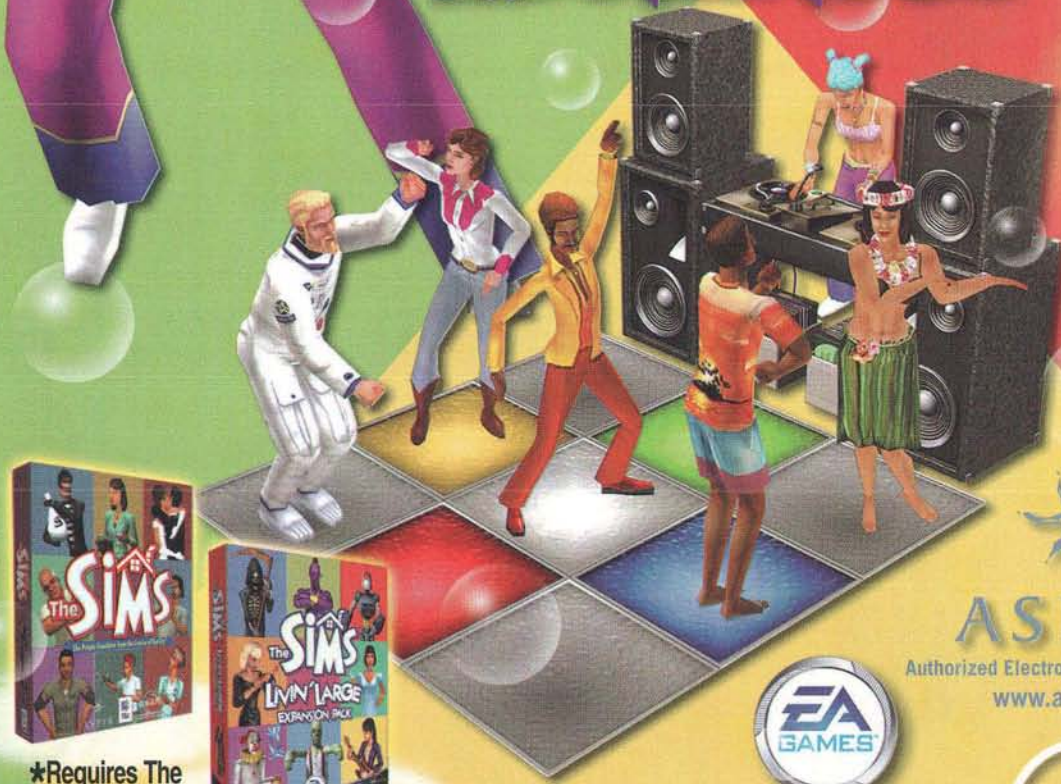
Company's estimated price: \$40

OS compatibility: Mac OS 8.6 or later, including OS X

Company: MacSoft, 800/229-2714, www.wizworks.com/macsoft

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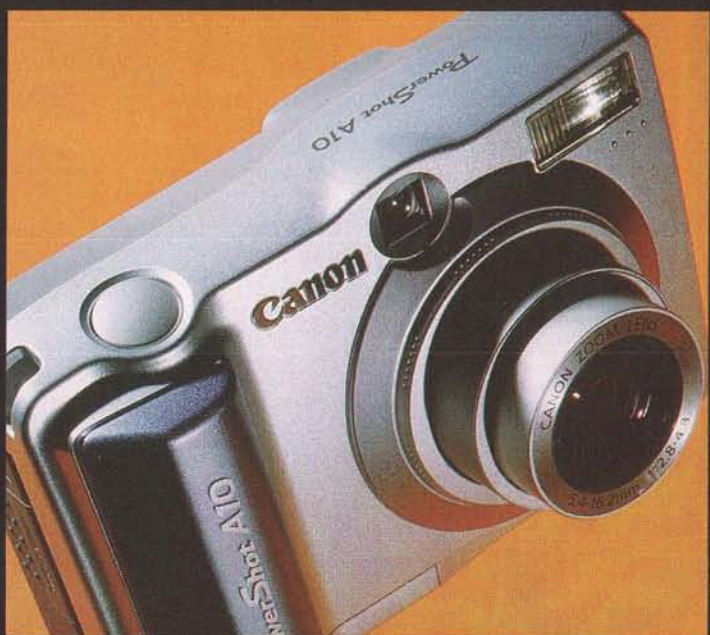
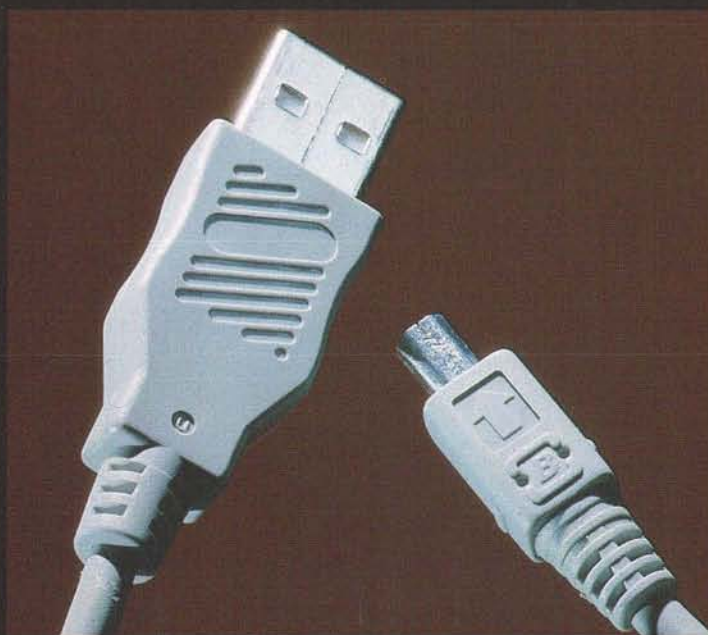
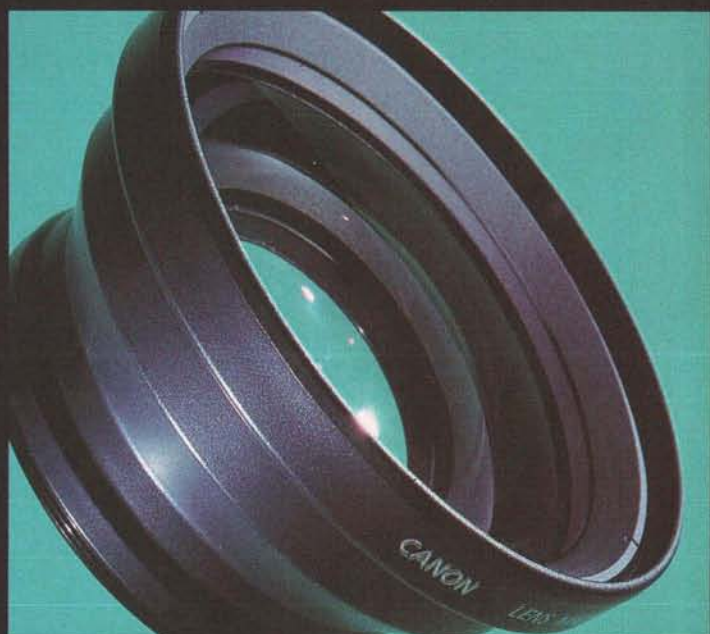
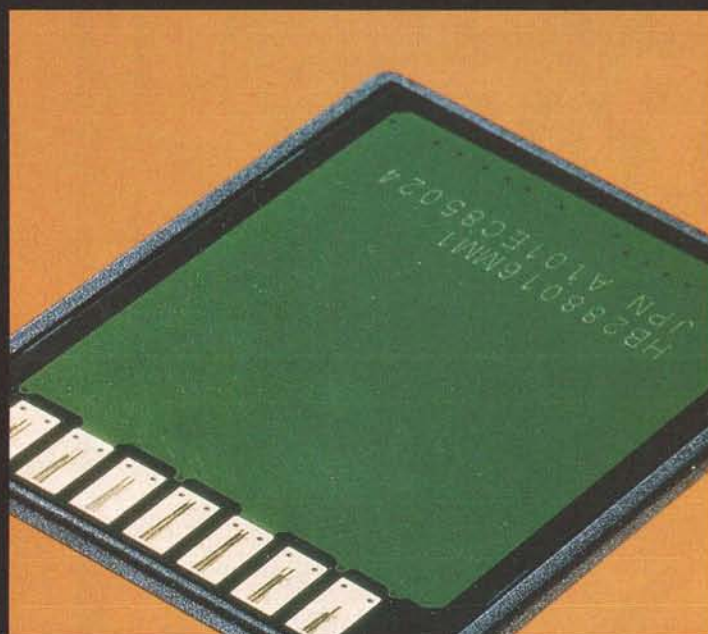


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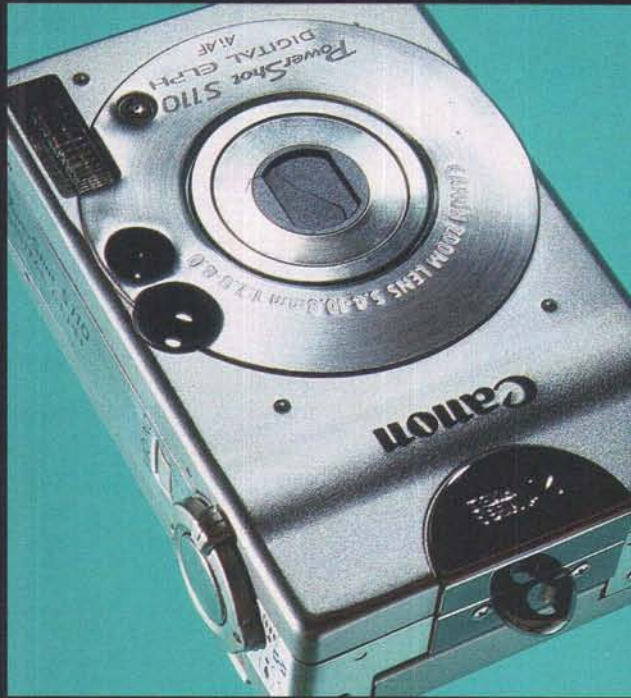


PHOTOS BY KEVIN TWOMEY

We Test 26 Digital Cameras to Find the Right One for You

MACWORLD'S ULTIMATE BUYERS' GUIDE

DIGITAL CAMERAS



Viewed from the perspective of film photography, digital cameras can seem downright miraculous. More computer than camera, they let you not only take pictures but also preview them on the spot, delete your flubs, and even capture short movies. When combined with a Mac and a color printer, these cameras bring capture, development, image correction, and printing under one roof—and the entire process often takes less time than you'd wait to get a single roll of film developed at the local drugstore.

But to deliver this speed and flexibility, digital cameras require considerable money, attention, and technical know-how from their users. The fact is, digital cameras aren't for everyone. And with camera technology changing faster than the click of a shutter, even those who feel at home in a digital darkroom can have trouble keeping track of the latest trends and models.

That's why *Macworld* put together this Ultimate Buyers' Guide, looking not only at how to buy a digital camera but also at whether you should buy one at all. We began by gathering 26 of the newest digital cameras available and dividing them into three categories, according to how many millions of pixels (referred to as megapixels) they deliver. The roster includes one-megapixel cameras priced below \$600, two-megapixel cameras priced below \$800, and three-megapixel cameras that cost no more than \$1,000. We then weighed test results and reviewers' experiences to determine the best camera in each group (see "The Power of Simplicity," "The Perfect Compromise," and "Photography at Its Best"). But knowing which cameras are our favorites doesn't help you answer a more fundamental question: Do you need one in the first place? Before you pull out your credit card, decide whether digital is really for you—and if it is, learn how to pick the digital camera that best suits the way you work and live.

BY DEKE MCCLELLAND

“With a digital camera, you know you’ll end up with the image you want. If you’re using film, you may not discover your blunders until it’s too late.”

Film versus Digital

I recently loaned one of my digital cameras to a photographer friend wise in the ways of film but relatively new to digital photography. I explained to him that rather than taking a Polaroid snapshot to judge a scene’s lighting and color before switching to his professional film camera (a common practice among studio photographers), he could use a single digital camera to take both the test shots *and* the final images. He was definitely intrigued.

But when he returned the camera a few weeks later, my friend seemed considerably sobered by the experience. Although he was pleased with the images, the process of downloading, editing, and archiving them had turned out to be more hassle than he’d bargained for. “I thought I was going to go nuts trying to make it all work!” he told me.

A camera that does everything may well require more effort than you expect—or want—to expend. What may seem like a blessing to some people—for example, having the ability to fine-tune images to perfection—can seem like a burden to those less patient. So is a digital camera the right tool for you? Here are the main arguments for and against making the switch to digital photography.

Image Quality One of the most hotly contested issues among film proponents and their digital counterparts is image quality. Film produces very high resolutions, which result in crisp, finely detailed images. While it’s impossible to accurately compare film and digital resolutions, conventional wisdom in the camera industry is that

35mm film can render an image in around six million pixels. If that’s true, then even the best of the cameras we looked at are only half as detailed. And professional film provides even higher resolutions, widening the gap.

However, to most folks, such comparisons are meaningless. Resolution currently favors film, but not to the extent that the numbers suggest. Depending on the film standard and quality, actual resolutions can be much lower than six million pixels. And as the image sensors on digital cameras improve, the discrepancy in image quality will continue to shrink. In fact, six-megapixel cameras such as the \$7,000 Kodak Professional DCS 760 (♦♦♦♦; www.macworld.com/2001/10/reviews/profdigcams.html) are already on the market.

Beyond the issue of resolution, however, film brings other unknowns to the image-quality equation. For example, film quality may degrade over time, depending on storage conditions—enough to cause variations even from shot to shot. With a digital camera, though, you know exactly what you’re working with: the image sensor captures one image after another, consistently and reliably. And if digital photos are properly archived and maintained, they can last indefinitely with no quality loss. (It’s a good idea to archive your digital images to fresh media every ten years or so to avoid losing your photographs to corrupted or outdated discs.)

Freedom to Experiment Resolution plays an important role in determining image quality, but it’s not the only consideration. The factor that truly tips the debate in favor of digital is natural selection: if you want the perfect picture of your niece’s wedding, for example, you’re likelier to get it with a digital camera because you’ll probably shoot more photos.

With a film camera, most people take one or two pictures of a scene and then move on. You can’t expend too many frames on any one scene because you might run out of film—and every shot costs money. But digital photography is considerably more cost efficient. After the initial expense of a camera’s media card, which stores images (see “Sizing Up Your Digital Media”), and batteries (many of the cameras we tested come with rechargeable batteries), individual digital photos are almost free. This means you can afford to take ten or twenty shots of each scene, trying out different options and angles until all of your photo’s elements are just right.

And since digital cameras let you immediately review your shots and delete bad ones, you don’t have to waste storage space on images you know won’t work—such as those capturing untimely blinks or unexpected movements. With a digital camera, you’ll know you have the image you want. If you’re using film, you may not discover a blunder until the prints are finished—and at that



point, it's far too late to do anything about it.

Creative Control Digital cameras also give you more control over your images. Once you have the image you want, you can promptly download it to your Mac, open it in your favorite image-editing program, and tweak it to perfection—cropping, correcting, and retouching. Then, armed with a photo-quality printer, you can output an image that looks even sharper and more vivid than a photographic print.

Of course, this level of control comes at a cost: most notably, your time and energy. Depending on your proficiency with image-editing software and the amount of correction necessary, a single digital image can take you upwards of 20 minutes to perfect. If you're not comfortable with image-editing software, or if you simply don't have the time—or patience—to bother with it, you may find this a bigger commitment than you're willing to make.

Busy digital-camera owners can get commercial prints of their digital photos by uploading them to a photo-printing Web site, but this can be costly, and it requires waiting for photos to arrive by mail.

For all the touted speed and convenience of digital cameras, film still takes less effort in the long run. You simply shoot your pictures, drop the film off at a drugstore, and pick up the prints a few days—or even an hour—later. You don't have as much control over the quality of the final image, but if perfection isn't something you aspire to, that may be a fair trade-off.

Cost Switching from film photography to digital will cost you more than time; it will also make a considerable dent in your wallet. A digital camera is a powerful device, but it can't edit, print, or archive photos; all of that requires extra hardware (see "The Price of Digital"). The cost of setting up a digital darkroom from scratch can range anywhere from

continues

THE PRICE OF DIGITAL

If you were planning to develop and print your own photographs, you'd expect to purchase more than a camera and some film. Building a digital darkroom likewise requires some investment. Of course, the first expense is a camera, and our favorites range in price from \$349, for the Canon PowerShot A10 (see "The Power of Simplicity"), to \$899, for the Fuji FinePix 6800 Zoom (see "Photography at Its Best"). But a camera isn't enough. Here are the other things you'll need if you want to process, download, edit, print, and catalog your photos:

COMPUTER

To take full advantage of digital photography, you need a computer. Any desktop model with a USB port is fine, but if you'll be using your camera on the road, a PowerBook or iBook is a good investment. With a laptop on hand, you can take pictures, view them on screen, and edit them without returning to your home or office. **Cost: \$999 to \$3,500**

MEDIA READER

Somehow, you'll need to get the pictures to your computer. Most cameras connect to a Mac via a USB cable, but they often require installing special software—and learning how to use it, which can be appallingly difficult. A better idea is buying a card reader, such as Microtech's \$40 Zio USB CompactFlash Card Reader (●●●●; www.macworld.com/2001/02/14/reviews/compactflash.html), that lets you copy pictures directly to your desktop from the camera's memory card. **Cost: \$30 to \$100**

IMAGE-EDITING SOFTWARE

Many cameras include software for editing your images. But often, the software is extremely limited or quits working after a month, when you're asked to buy a licensed copy. To get the most out of your images and avoid hassles, purchase an industry-standard image editor that provides a wide range of photo-correction features, such as the \$99 Adobe Photoshop Elements (●●●●½; *Reviews*, August 2001) or the full-featured—and considerably more expensive, at \$609—Adobe Photoshop 6.0 (●●●●½; *Reviews*, January 2001). **Cost: \$99 to \$609**

COLOR PRINTER

You don't need a printer to e-mail pictures, post them to a Web site, or simply view them on screen. But most folks want printed versions of their photos. Photo-quality ink-jet printers, such as the \$149 Epson Stylus Photo 780 (●●●●½), produce amazingly colorful images that look almost as good as film prints (see "Macworld's Ultimate Buyers' Guide: Printers," August 2001). Consumer-grade dye-sublimation printers such as the \$999 Olympus Camedia P-400 (●●●●; www.macworld.com/2001/06/11/reviews/p-400/html.html) produce results that look even better. **Cost: \$150 to \$1,000**

CD-R DRIVE

You'll quickly run out of space if you try to keep all of your digital photographs on your computer's hard drive. A better idea is to archive your images on CDs. With a CD recorder, such as the \$300 LaCie 16x10x40x U&I CD-RW Drive (●●●●; *Reviews*, August 2001), even the largest, uncompressed image costs just a few pennies to back up. **Cost: \$200 to \$400**

THE POWER OF SIMPLICITY

THERE'S NOTHING LIKE collecting candid snapshots as keepsakes. But chances are, several shots on each roll of film you shoot aren't worth a second glance. By switching to a digital camera, you can avoid wasting money on marginal prints and be sure you have the images you want. If you need prints no larger than five by seven inches, or if you plan to use your images for a Web site, a one-megapixel digital camera can deliver the pictures you want at a reasonable price.

Macworld Lab tested five one-megapixel digital cameras priced from \$199 to \$600 (see "26 Digital

spot metering but no multiple-exposure modes.) The Cyber-shot DCS-P30 also has ISO settings of 100, 200, and 400, so you can manually select the camera's light sensitivity instead of relying on its autosensor.

To help you get great shots when you're far from your subject, the Mavica MVC-FD92 offers an impressive 8x optical zoom. The Cyber-shot DSC-P30 and the PowerShot A10 both feature a more common 3x optical zoom. Neither the Olympus Camedia Brio D-100 nor the Camedia D-370 has an optical zoom; instead they have a marginally useful 2x digital zoom.

Both Sony cameras and the Camedia D-370 can also record short movies (in MPEG and QuickTime format, respectively). The Mavica MVC-FD92 can simultaneously record 15 seconds of audio and high-quality video. The length of a movie shot with the Cyber-shot DSC-P30 (video only) depends on the capacity of the media card. The PowerShot A10 and the Camedia D-370 have special modes for capturing panoramas.

Your Best Shot

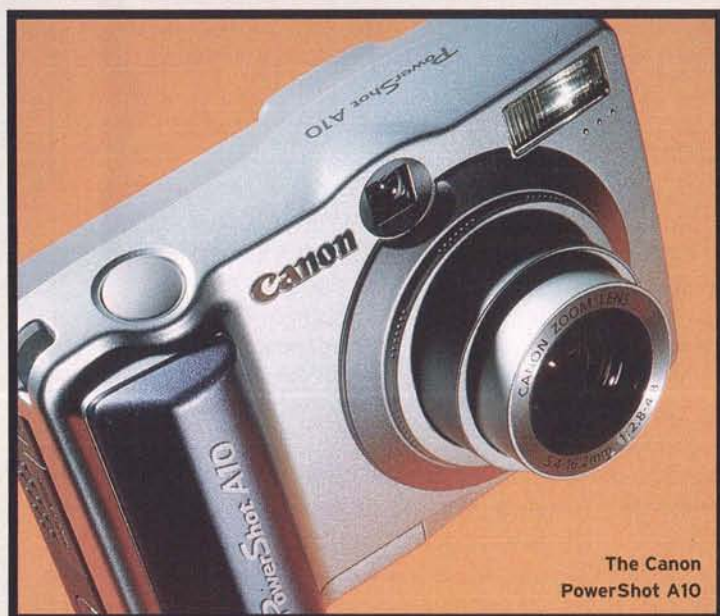
Of course, the most important measure of any camera is the quality of its images. In our tests, we took both indoor and outdoor shots with each camera and then examined the results for color fidelity, contrast, and sharpness (see "One-Megapixel Match"). In the end, the PowerShot A10 performed best overall, delivering excellent images in a variety of lighting situations and showing no significant weaknesses.

Though it favored warm tones, the Camedia Brio D-100 was the clear color-fidelity winner. The PowerShot A10's images were a bit too red but otherwise comparable to output from the Brio. The Camedia D-370 and both Sony cameras had trouble producing accurate blues. Some images from the Mavica MVC-FD92 showed a greenish cast. Oddly, this problem was worse when we used manual white-balance settings.

When it came to contrast, the Cyber-shot DSC-P30 offered the best balance of highlight and shadow detail, followed by the Camedia Brio D-100. Images from the Mavica MVC-FD92 appeared underexposed. The PowerShot A10 led the pack in sharpness, with clear, crisp images. Results from the Cyber-shot DSC-P30 weren't far behind. Images from the Camedia D-370 were noticeably less distinct than the rest.

Left in the Dark

It's often impossible to position your subjects in perfect lighting. In such cases, a camera's built-in flash *continues*



The Canon
PowerShot A10

Cameras Compared"). After comparing features and evaluating each camera's image quality, we determined that the \$349 Canon PowerShot A10 offered the best combination of performance and value.

Feature Count

Since you can't always control your shooting conditions, you want a camera with the flexibility to adapt to a variety of situations. Each of the cameras we looked at was easy to use, but some were better-equipped than others to face the unknown. The two Sony cameras—the Cyber-shot DCS-P30 and Mavica MVC-FD92—provide the most options for shooting in unpredictable lighting; they alone include both spot metering (using a small portion of the frame to measure light reflecting off a subject) and multiple-exposure modes, for nighttime shooting and other difficult circumstances. (The Olympus Camedia D-370 offers

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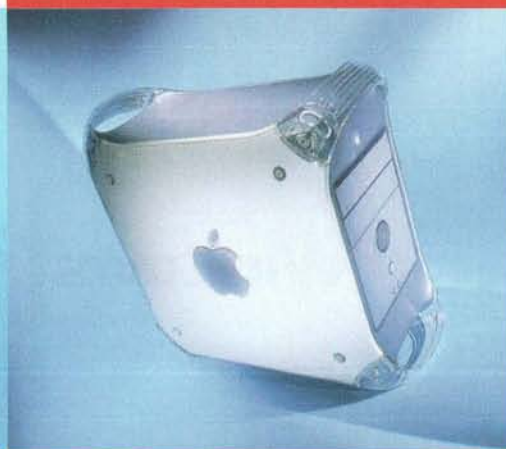


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One-Megapixel Match



Best results in bold.		MOUSE RATING	SPEED		IMAGE QUALITY			
			Seconds to Power Up	Pictures Taken in 30 Seconds	Color Fidelity	Contrast	Sharpness	Fill Flash
Canon PowerShot A10	Shorter is better. Longer is better.	••••½	4	12	•••	•	•••	•••
Olympus Camedia Brio D-100	••••	•••	3	10	•••	••	•	•
Olympus Camedia D-370	••••	•••	3	13	••	••	•	•
Sony Cyber-shot DSC-P30	••••	•••	5	8	•	••	••	•••
Sony Mavica MVC-FD92	••••½	•••	4	12	•	•	••	•

← Better Better →

We took one indoor and one outdoor photo with each camera, using best-quality settings. In Adobe Photoshop 6.0.1, we printed the images on premium-quality photo paper from an Epson Stylus Photo 780 printer set at its highest resolution. For the outdoor shot, we photographed a person standing in shadow, with forced flash to test the camera's fill-flash ability. The indoor shot was of a still life in a light box set at 5,000 degrees Kelvin. We set the cameras to automatic white point and turned off the flash. A panel of experts judged the results.—Macworld Lab testing by Jason Cox

helps to keep pictures from turning out too dark. We tested the fill flash of each camera by shooting subjects backlit by daylight. The PowerShot A10 captured the most eye-pleasing results. The Cyber-shot DSC-P30's fill flash was not quite as bright but produced attractive images. The remaining cameras' flashes weren't up to the task; images were unacceptably dark, and subjects were hard to see.

You may encounter other situations in which a flash is inappropriate and it makes sense instead to use the limited light available. Here, aperture size plays a big role. None of the cameras in this roundup has a truly versatile lens. Nevertheless, with a wider aperture of f2.8, the Mavica MVC-FD92 (in Twilight mode) and the PowerShot A10 both produced acceptably sharp images. The Camedia Brio D-100 and the Cyber-shot DSC-P30 also created sharp images, but photos taken with these cameras under incandescent lighting had a strong yellow cast. When set to Twilight mode, the Cyber-shot DSC-P30 couldn't compensate for low light, and like the Camedia D-370, it frequently produced blurred images.

What's on the Menu

Making the transition from film to digital photography doesn't have to be difficult. Four of the cameras we tested physically resemble their 35mm point-and-shoot counterparts. The Mavica MVC-FD92, however, is considerably larger and heavier than the others due to its built-in floppy drive.

All of the models are easy to use, with conveniently positioned controls and logical menus. With the PowerShot A10, you don't even have to scroll through menus to make adjustments for different lighting situations; you can directly access white-balance and exposure-compensation controls via a button on the back of the camera. All cameras in the group responded quickly to their controls. The exception was on the Mavica MVC-FD92: when you

press its shutter button halfway down to set focus and exposure, the image on the LCD viewfinder freezes momentarily—a troublesome quirk if you're taking action shots.

The PowerShot A10 was the only camera to require special software for downloading images to your computer. All the other cameras mounted their media directly on the desktop when connected via USB. All of the cameras accept some type of removable storage card.

The Mavica MVC-FD92, in addition to accepting Sony's proprietary Memory Sticks, offers an alternative—and outdated—storage method: floppy disk. This feature will be useful only to people with older computers or external floppy drives. Unfortunately, Sony includes neither a floppy disk nor a Memory Stick with the MVC-FD92. Likewise, the Camedia D-370 ships with no card for its SmartMedia slot, although it has 2MB of internal memory.

Macworld's Buying Advice

If you want a one-megapixel camera that can do a little of everything, the \$300 Sony Cyber-shot DSC-P30 may be right for you. It produces acceptable images, captures short movies, and comes loaded with extra features. But if image quality is a top concern, the \$349 Canon PowerShot A10 is worth the extra money. At a moderate price, it delivers excellent image quality and an attractive combination of features.—BONNIE HUIE

EDITORS' CHOICE

••••½ **Canon PowerShot A10** With the best balance of features and performance, this one-megapixel digital camera delivers sharp images with accurate colors. **Company:** Canon (800/652-2666, www.usa.canon.com) **Company's estimated price:** \$349

26 DIGITAL CAMERAS COMPARED

COMPANY	PRODUCT	MOUSE RATING	COMPANY'S ESTIMATED PRICE	CONTACT	CCD RESOLUTION (IN MEGAPIXELS)	DIMENSIONS (IN INCHES, W × H × D)	WEIGHT WITH BATTERIES (IN OUNCES)	OPTICAL ZOOM/DIGITAL ZOOM	SPOT METERING	FOCAL LENGTH (35MM EQUIVALENT)
ONE-MEGAPIXEL CAMERAS										
Canon	PowerShot A10 ★	★★★½	\$349	800/652-2666, www.usa.canon.com	1.3	4.3 × 2.8 × 1.5	9.3	3x/6x	no	35mm-105mm
Olympus	Camedia Brio D-100	★★★	\$299	800/622-6372, www.olympusamerica.com	1.3	4.3 × 2.4 × 1.3	6.5	none/2x	no	35mm
	Camedia D-370	★★★	\$199	800/622-6372, www.olympusamerica.com	1.3	4.8 × 2.6 × 1.8	8.4	none/2x	yes	35mm
Sony	Cyber-shot DSC-P30	★★★	\$300	800/222-7669, www.sonystyle.com	1.3	4.9 × 2 × 2.6	9.4	3x/6x	yes	36mm-110mm
	Mavica MVC-FD92	★★½	\$600	800/222-7669, www.sonystyle.com	1.3	5.6 × 4.1 × 3.1	22.5	8x/16x	yes	41mm-328mm
TWO-MEGAPIXEL CAMERAS										
Canon	PowerShot A20	★★★½	\$399	800/652-2666, www.usa.canon.com	2.1	4.5 × 3.0 × 2.0	12.4	3x/2.5x	no	35mm-105mm
	PowerShot S110 Digital Elph ★	★★★★½	\$499	800/652-2666, www.usa.canon.com	2.1	3.8 × 2.5 × 1.3	8.1	2x/2.5x	no	30mm-70mm
	PowerShot S300 Digital Elph	★★★★	\$599	800/652-2666, www.usa.canon.com	2.1	4.0 × 2.5 × 1.5	9.7	3x/2.5x	no	35mm-105mm
Kodak	DX3500	★★★★	\$299	800/235-6325, www.kodak.com	2.2	5.0 × 3.0 × 2.0	8.9	none/3x	no	38mm
	DC5000 Zoom	★★★	\$600	800/235-6325, www.kodak.com	2.1	5.7 × 3.5 × 3.5	20.4	2x/3x	no	30mm-60mm
Nikon	Coolpix 775	★★★★	\$450	800/645-6687, www.nikonusa.com	2.1	3.4 × 2.6 × 1.7	7.0	3x/2.5x	no	38mm-115mm
Olympus	Camedia D-510 Zoom	★★★½	\$399	800/622-6372, www.olympusamerica.com	2.1	4.8 × 2.7 × 2.0	11.7	3x/3x	yes	35mm-105mm
	Camedia C-700 UltraZoom	★★	\$799	800/622-6372, www.olympusamerica.com	2.1	4.2 × 3.0 × 3.0	13.7	10x/2.7x	yes	38mm-380mm
	Camedia C-2100 UltraZoom	★★★★	\$799	800/622-6372, www.olympusamerica.com	2.1	4.5 × 3.2 × 5.7	22.3	10x/none	yes	38mm-380mm
Samsung	Digimax 210SE	★★	\$695	800/993-4110, www.samsung.com	2.1	4.5 × 2.7 × 2.2	12.7	3x/2x	no	38mm-114mm
Toshiba	PDR-M61	★★½	\$399	888/241-5874, www.toshiba.com	2.3	4.7 × 3.2 × 2.5	14.1	3x/2x	no	38mm-114mm
THREE-MEGAPIXEL CAMERAS										
Canon	PowerShot G1	★★½	\$799	800/652-2666, www.usa.canon.com	3.3	5.0 × 3.2 × 2.7	15.4	3x/4x	yes	34mm-102mm
Casio	QV-3500EX	★★½	\$599	800/836-8580, www.casio.com	3.3	5.5 × 3.2 × 3.7	12.3	3x/4x	yes	33mm-100mm
Epson	PhotoPC 3100Z	★★★★	\$799	800/463-7766, www.epson.com	3.3	4.3 × 3.5 × 2.8	13.2	3x/2x	yes	34mm-102mm
Fuji	FinePix 6800 Zoom ★	★★★★½	\$899	800/800-3854, www.fujifilm.com	3.3	3.8 × 3.2 × 1.5	9.6	3x/4.4x	yes	36mm-108mm
Kodak	DC4800 Zoom	★★★½	\$599	800/235-6325, www.kodak.com	3.3	5.2 × 3.0 × 2.8	12.3	3x/2x	yes	28mm-84mm
Kyocera	Finecam S3	★★★½	\$699	732/560-0060, www.kyocera.com	3.3	3.5 × 2.2 × 1.5	7.2	2x/2x	yes	38mm-76mm
Olympus	Camedia C-3040 Zoom	★★★	\$999	800/622-6372, www.olympusamerica.com	3.3	4.5 × 3.0 × 2.5	13.3	3x/2.5x	yes	32mm-96mm
Ricoh	RDC-7	★★★	\$799	800/459-3968, www.ricohzone.com	3.3	5.3 × 2.9 × 1.1	10.2	3x/3.2x	no	35mm-105mm
Sony	Mavica MVC-CD300	★★½	\$1,000	800/222-7669, www.sonystyle.com	3.3	5.5 × 3.7 × 4.0	23.1	3x/6x	yes	34mm-102mm
Toshiba	PDR-M65	★★	\$499	800/526-0266, www.toshiba.com	3.3	4.8 × 2.9 × 2.4	11.4	3x/2x	no	38mm-114mm

★ = Editors' Choice. * N/A = not applicable. This camera ships with one mini-CD for recording images.

FLASH OPTIONS	ISO OPTIONS	DEFAULT MEMORY	MEDIA FORMAT	RECHARGEABLE BATTERIES AND CHARGER INCLUDED?	PROS	CONS
Auto, red-eye, off	100	8MB	CompactFlash	no	Very sharp images; good color fidelity.	No movie-capture mode.
Auto, fill, red-eye, slow synchronization, off	Auto	8MB	SmartMedia	no	Excellent color fidelity; compact size.	No optical zoom; weak flash.
Auto, fill, red-eye, slow synchronization, SR, off	Auto	2MB (internal)	SmartMedia	no	Inexpensive; spot metering; good battery life.	Images are not sharp; weak flash; SmartMedia not included.
Auto, fill, off	Auto, 100, 200, 400	4MB	Memory Stick	no	Sharp images; multiple-exposure mode; spot metering.	Includes only 4MB of storage; poor color fidelity.
Auto, red-eye, off	100	none	Memory Stick, 1.44MB floppy disk	yes	Powerful zoom; multiple-exposure mode; spot metering; battery charges inside camera.	Memory Stick not included; PC-formatted floppy drive; bulky; weak flash.
Auto, on, red-eye, off	100	8MB	CompactFlash	no	Good image quality; good fit in hand; inexpensive.	Weak flash.
Auto, on, red-eye, slow synchronization, off	100	8MB	CompactFlash	no	Compact; lightweight; low digital noise; good image quality.	Proprietary battery—need more than one for trips.
Auto, on, red-eye, slow synchronization, off	100	8MB	CompactFlash	no	Compact; lightweight; good image quality.	Proprietary battery—need more than one for trips.
Auto, fill, red-eye, off	100, 200	8MB	CompactFlash	no	Inexpensive; good flash; very good image quality; lightweight.	No display for camera information; no optical zoom; feels poorly made.
Auto, fill, red-eye, off	100	8MB	CompactFlash	no	Durable; useful in harsh environments; good color.	Bulky; images lack sharpness and contrast.
Auto, fill, red-eye, slow synchronization, off	100, 200	8MB	CompactFlash	yes	Compact; lightweight; good image quality.	Small LCD; too many shooting modes.
Auto, fill, red-eye, night scene, off	100, 200, 400	8MB	SmartMedia	no	Good fit in hand; inexpensive.	Poor image quality; noisy images.
Auto, fill, red-eye, slow synchronization, off	100, 200, 400	8MB	SmartMedia	no	Good fit in hand; 10× zoom.	Very poor image quality; expensive.
Auto, fill, red-eye, slow synchronization, off	100, 200, 400	8MB	SmartMedia	no	10× zoom; SLR form factor; good image quality.	Expensive; not very compact.
Auto, fill, red-eye, off	100	8MB	CompactFlash	no	Good fit in hand.	Clumsy to turn on; very poor image quality; hard to navigate menus; expensive.
Auto, fill, red-eye, off	100	8MB	CompactFlash	no	Inexpensive.	No hard-copy manuals; very poor image quality; feels poorly made.
Auto, red-eye, off	100, 200, 400	16MB	CompactFlash	yes	LCD screen pivots; battery charges inside camera.	Complex interface; poor flash; lens cap interferes with powering up camera.
Auto, fill, red-eye, off	100, 180, 300, 500	16MB	CompactFlash	no	Loaded with extras, including menu of presets for various photographic and lighting situations.	Very poor image quality; can't capture sound; presets too sweeping to be useful to beginners.
Auto, red-eye, slow synchronization, off	100, 200, 400	16MB	CompactFlash	no	Good image quality; straightforward menu system; includes lens adapter and case; excellent documentation.	Lacks rechargeable batteries; relatively few manual-focus increments.
Auto, on, red-eye, slow synchronization, off	100, 200, 400	16MB	SmartMedia	yes	First-rate image quality; superior upsampling; straightforward controls; battery charges inside camera; automatic lens cover.	No panoramic option; video limited to 10 frames per second.
Auto, fill, red-eye, strobe, off	100, 200, 400	16MB	CompactFlash	yes	First-rate image quality; straightforward controls and menu; battery charges inside camera.	No manual focus; lacks audio, video, and panoramic functions; no lens cap.
Auto, fill, red-eye, off	100, 200, 400	16MB	SD card	yes	Very compact; includes media card reader; battery charges inside camera; easy to use.	Relatively few manual-focus increments; lacks audio, video, and panoramic functions.
Auto, fill, red-eye, slow synchronization, off	Auto; 100, 200, 400	16MB	SmartMedia	no	Straightforward menu system; best panoramic feature in group.	Lacks rechargeable batteries; tends to blow out highlights in skies; lens cap interferes with powering up camera.
Auto, on, red-eye, slow synchronization, off	100, 200, 400	8MB	SmartMedia	yes	LCD screen pivots; special mode merges two photos to produce one higher-resolution image (still subjects only).	Middling image quality; awkwardly positioned lens with no cap.
Auto, fill, red-eye, off	Auto, 100, 200, 400	N/A*	Mini-CD	yes	Good image quality; battery charges inside camera.	Large; expensive; no manual focus; uses bulky, slow, and labor-intensive mini-CDs.
Auto, fill, red-eye, slow synchronization, off	100, 200, 400	8MB	SmartMedia	no	Least expensive camera in group; automatic lens cover.	Blue cast to images; clunky design; no manual focus or rechargeable batteries; lacks audio, video, and panoramic functions.

“Three-megapixel images take up more room in your computer's memory, more space on your hard drive, and more of your time to edit and print.”

\$2,600 at the low end—about what you'd spend on a first-rate 35mm film camera and on your first 200 rolls of film—to \$6,500 at the high end.

If that sounds shockingly steep, bear in mind that these numbers are for people starting with nothing. If you already own a few of the basics—a USB-enabled computer, a decent ink-jet printer, and a CD-R drive, for starters—then your digital darkroom could cost you no more than a few hundred dollars, depending on the camera you choose. (The cameras we looked at are priced from \$199 to \$1,000.) This may still be more than you'd spend on a point-and-shoot film camera, but if you use your digital camera regularly, the money you save on film and processing can quickly make up the difference.

Of course, if you've invested in film-camera accessories such as wide-angle and telephoto lenses, keep in mind that these add-ons won't be compatible with most digital cameras on the market. Although a few top-of-the-line digital cameras—such as the Epson PhotoPC 3100Zoom—include lens adapters, most digital cameras are essentially point-and-shoot devices. This could frustrate photographers accustomed to the

relative flexibility of most high-end film cameras.

Making the Choice So what's the verdict? If you're the least bit shy of technology, or if you don't have a lot of time to spare, you may be happier sticking with film. On the other hand, if you enjoy spending time working at your Mac, or if you're dissatisfied with your film results and think you can do better, you'll probably take to digital like an otter to water.

Counting Your Pixels

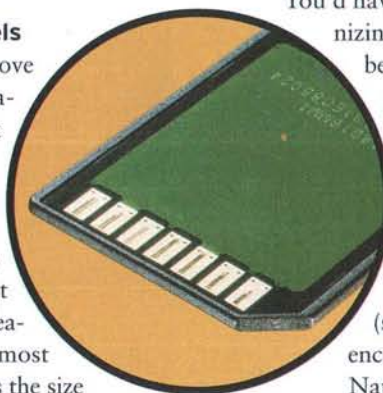
If you decide to move to digital photography, your first task will be deciding just how much power you need in a camera. Digital cameras have many different shapes, prices, and feature sets, but the most important variance is the size of the images they record. A digital camera's resolution is measured in the number of pixels—the tiny dots of color that form a digital image—its CCD captures (the CCD, or charge-coupled device, is the digital equivalent of film). Four years ago, the top digital cameras boasted a measly three

hundred thousand pixels. Cameras today capture at least one megapixel, and many grab more than three.

Digital-imaging aesthetes will tell you that, where pixels are concerned, there's no such thing as enough. To an extent they're right: pixels lend detail and definition to a photograph. Imagine a homeroom photo of 30 or 40 kids. If a camera rendered that photo using a hundred pixels, each kid would get about three pixels.

You'd have a hard time recognizing the kids as human beings, let alone picking your child out of the crowd. But ratchet up the pixel count to a few million, and you can make out a freckle on your daughter's nose (see “What a Difference a Pixel Makes”).

Naturally, high pixel counts have disadvantages, the first and most obvious of which is price. A top-of-the-line three-megapixel camera costs, on average, twice what its one-megapixel counterpart does. But the pocketbook isn't the only thing affected. The abundance of pixels that is so essential for good image quality



ONE MEGAPIXEL



Canon
PowerShot A10



Olympus
Camedia
Brio D-100



Olympus
Camedia
D-370



Sony
Cyber-shot
DSC-P30



Sony
Mavica
MVC-FD92



Canon
PowerShot A20



Canon
PowerShot S110
Digital Elph

TWO MEGAPIXELS

WHAT A DIFFERENCE A PIXEL MAKES



One megapixel



Two megapixels



Three megapixels

It's clear that pixels are valuable—after all, a three-megapixel camera can cost two or three times as much as a one-megapixel device. But why? Pixels (the word is short for *picture element*) are the tiny dots that make up a digital image. The more pixels a camera uses to reproduce an image, the more detailed that image will be. To show you how pixel numbers affect the quality of digital photographs, we shot a scene three times—with one-, two-, and three-megapixel cameras. We then printed each photograph at eight by ten inches with a resolution of 300 pixels per inch. Notice that the small sample from the one-megapixel image (left) appears blocky and blurred, while the three-megapixel image (right) is sharp and highly detailed.

also burdens your Mac. While the size of high-quality images from our one-megapixel cameras averaged about 500K, the best images from the three-megapixel cameras we tested averaged more than 1.5MB—and that's for a *compressed* image. (When you open a three-megapixel image in Adobe Photoshop, it grows to 9MB!) Three-megapixel images take up more room in your computer's memory, more space on your hard drive, and more of your time to edit and print.

They also cost more to archive. The first CD archive of digital photos I ever burned contained more than

3,000 photos captured over three years. The CD I burned last week held fewer than 400 images captured over just seven weeks. If this trend continues, I'll soon be churning out CDs as if they were 400K floppies.

The lesson, then, is to purchase a camera with as few pixels as you reasonably need. If your sole intention is to post images on the Web, then a one-megapixel camera will serve you well. A typical Web photo measures 300 by 400 pixels, a scant 10 percent of the detail a one-megapixel camera delivers. If you intend to print your images, however, higher resolutions

may be in order. For smooth, crisp photos, you should print your images at between 150 and 300 pixels per inch. This means that a one-megapixel image looks great when it's printed at three by four inches, but it may begin to lose definition and clarity when it's bumped up to five by seven inches. A three-megapixel image, on the other hand, prints crystal clear at five by seven inches, and you can even enlarge it to a full nine by twelve inches.

Now, you might ask why, if a one-megapixel image can produce images

continues



Canon
PowerShot S300
Digital Elph



Kodak
DX3500



Kodak
DC5000
Zoom



Nikon
Coolpix 775



Olympus
Camedia
D-510 Zoom



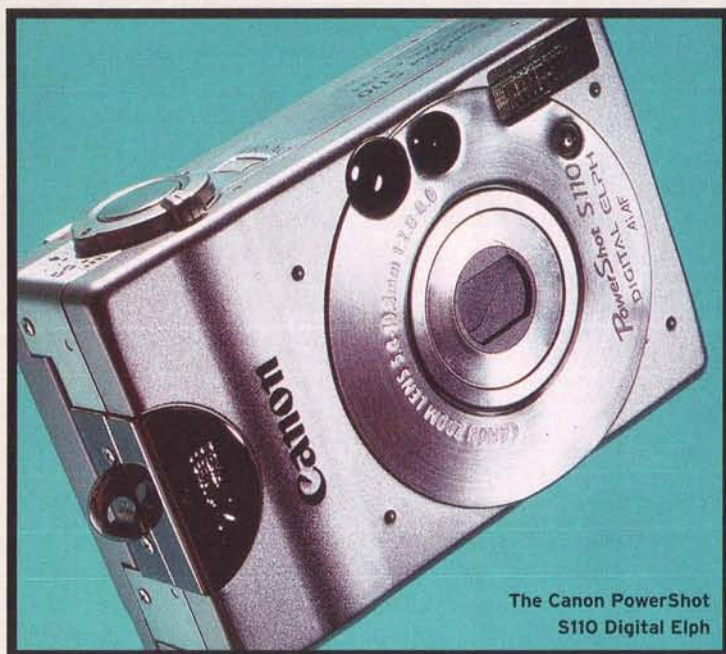
Olympus
Camedia C-700
UltraZoom



Olympus
Camedia C-2100
UltraZoom

THE PERFECT COMPROMISE

DESPITE THE INTRODUCTION of three-megapixel cameras last year, two-megapixel models remain the most popular type of digital camera on the market. Two-megapixel cameras offer an attractive combination of price and performance: they're more powerful than the modest one-megapixel cameras yet more affordable than their full-featured three-megapixel counterparts. We looked at eleven recently released two-megapixel cameras priced from \$299 to \$799 (see "26 Digital Cameras Compared"). After putting them through their paces, we determined that the \$499 Canon PowerShot S110 Digital Elph clearly stood out from the competition in value, quality, and style.



The Works

While all the cameras we tested offer a variety of special features, the Olympus Camedia C-2100 UltraZoom is the richest of our two-megapixel digital cameras, sporting an image-stabilization system to reduce blur in close-up shots, and a range of ISO settings for different lighting conditions.

To get great close-ups, you need an optical zoom. Both the Olympus Camedia C-700 UltraZoom and the Camedia C-2100 UltraZoom sport an impressive 10× optical zoom. The other cameras feature the more standard 2× or 3×. The Kodak DX3500 alone lacks an optical zoom, offering instead a less useful 3× digital zoom. The digital-zoom feature on all three Camedia models in this roundup is *seamless*: the camera automatically switches to digital zoom when the limit of

its optical range is reached. This can be annoying if you don't want to use the digital zoom.

In light sensitivity, the three Camedias are the clear winners, offering a choice of 100, 200, and 400 ISO settings. The DX3500 and the Nikon Coolpix 775 offer ISO settings as high as 200, while the rest of the cameras offer only 100.

Five of the cameras—the Olympus Camedia D-510 Zoom, C-700 UltraZoom, and C-2100 UltraZoom, and the Canon PowerShot S300 Digital Elph and S110 Digital Elph—offer an additional option: the ability to record QuickTime movies with sound. These two PowerShots can even play back the recorded video on their LCD screens.

Seeing Is Believing

After checking out their features, we turned our eye to how well these two-megapixel models performed their most crucial task: taking pictures. In a series of subjective tests evaluating image and flash quality, we found that the highest overall performance came from the DX3500, the PowerShot S110 Digital Elph, and the Camedia C-2100 UltraZoom.

The Samsung Digimax 210SE, Toshiba PDR-M61, and Camedia C-700 UltraZoom scored lowest in our photo tests. The images they produced lacked color fidelity, and they suffered from an excess of digital noise, giving solid areas of color a blotchy, uneven appearance. None of the cameras in the group produced truly sharp images, but those from the Kodak DC5000 Zoom, the Camedia C-700 UltraZoom, and the Digimax 210SE were noticeably the softest. Although the PowerShot S110 Digital Elph didn't receive outstanding scores in any individual test category, it consistently produced attractive images with less digital noise than the other cameras recorded.

When we used a flash to photograph a subject backlit by bright sunlight, only two of the cameras—the Camedia C-2100 UltraZoom and the DX3500—produced well-lit, attractive images. The Canon PowerShot A20 and the PDR-M61, by contrast, had poor fill flash, resulting in overly dark pictures.

Fitting In

With cameras, size does count. All of the models we looked at are relatively compact and easy to carry, with one notable exception: the DC5000 Zoom, which is significantly larger than any other camera in this roundup. Designed for outdoor use, all of the DC5000's controls have latches or switches that you can manipulate with gloved hands. Most of the cam-

Snapshots of Success

Macworld
LAB TEST

Best results in bold. Shorter is better. Longer is better. ●●● Excellent ●● Acceptable ● Poor	MOUSE RATING	SPEED		IMAGE QUALITY			
		Seconds to Power Up	Pictures Taken In 30 Seconds	Color Fidelity	Contrast	Sharpness	Fill Flash
Canon PowerShot A20	●●● 1/2	4	11	●●	●●	●●	●
Canon PowerShot S110 Digital Elph	●●● 1/2	4	15	●●	●●	●●	●●
Canon PowerShot S300 Digital Elph	●●●	4	10	●●	●●	●●	●●
Kodak DX3500	●●●	7	6	●●	●●	●●	●●●
Kodak DC5000 Zoom	●●●	4	4	●●	●	●	●●
Nikon Coolpix 775	●●●	6	9	●●	●●●	●●	●●
Olympus Camedia D-510 Zoom	●●● 1/2	4	10	●	●	●●	●●
Olympus Camedia C-700 UltraZoom	●●	4	10	●	●	●	●●
Olympus Camedia C-2100 UltraZoom	●●●	4	12	●●	●●	●●	●●●
Samsung Digimax 210SE	●●	5	5	●	●	●	●●
Toshiba PDR-M61	●● 1/2	5	6	●	●	●●	●

◀ Better
Better ▶

We took one indoor and one outdoor photo with each camera, using best-quality settings. In Adobe Photoshop 6.01, we printed the images on premium-quality photo paper from an Epson Stylus Photo 780 printer set at its highest resolution. For the outdoor shot, we photographed a person standing in shadow, with forced flash to test the camera's fill-flash ability. The indoor shot was of a still life in a light box set at 5,000 degrees Kelvin. We set the cameras to automatic white point and turned off the flash. A panel of experts judged the results.—Macworld Lab testing by Jason Cox

era's body is rubberized to make it weatherproof, and it's suited for use aboard ships and around heavy machinery, dust, and grit.

Although not as bulky as the DC5000, the Camedia C-2100 UltraZoom is heavier than the other digital cameras; however, it still fits well in the hand. The smallest cameras of the group—the Coolpix 775 and the PowerShot S110 Digital Elph and S300 Digital Elph—are roughly the size of a credit card, with the thickness of two decks of cards. The Coolpix 775 is also the lightest, weighing seven ounces (with its batteries).

Easy Does It

Picture-perfect moments sometimes come without much warning, so if your camera isn't easy to use, you could miss a shot. One of the most useful features of a digital camera is its LCD screen. Most of the cameras in this group feature an LCD measuring 1.8 inches, but owing to the Coolpix 775's compact size, its screen is smaller, at 1.5 inches. The Camedia C-2100 UltraZoom lacks a traditional optical viewfinder and instead relies entirely on its LCD screen to frame shots. Unfortunately, the LCD is less responsive than an optical viewfinder and does not work as well in low light.

Maneuvering through the LCD's screen menus was difficult on two of the cameras. The icons in the DC5000 Zoom's LCD display were confusing; we had to look them up in the user manual. And the Digimax 210SE's LCD employs a file-folder interface for menu-system navigation. Moving through its folders and menus proved cumbersome, and the navigation buttons were too small and difficult to press. Plus, to select a flash mode, you must navigate a *second* set of buttons on top of the camera, a time-consuming process. We also had a problem with the power button on the back

of the Digimax 210SE; it took us multiple attempts to turn the camera on, even with fresh batteries.

If you run into trouble with your PDR-M61 while you're away from your computer, you may be out of luck. Toshiba doesn't ship a hard-copy version of the user manual with the camera; all its hardware and software documentation are available only as PDF files on the supplied CD-ROM.

These digital cameras connect to the Mac via USB, but some connect more directly than others. Only the three Camedias let you connect to a computer and download images without special software or drivers.

Macworld's Buying Advice

Although many of the two-megapixel cameras in this group would make solid choices, a few stand out. One of the costliest models we looked at, the \$799 Olympus Camedia C-2100 is by far the richest in features, with one of the most powerful zooms available. If you can't spend a lot and don't need a zoom, the \$299 Kodak DX3500 offers sharp, attractive images at a price that's hard to beat. But the most appealing camera in this group is the incredibly compact \$499 Canon PowerShot S110 Digital Elph, which produces great images at a reasonable price.—RICK OLDANO

EDITORS' CHOICE

●●● 1/2 **Canon PowerShot S110 Digital Elph**
 The compact PowerShot S110 delivers sharp images, good contrast, and strong color fidelity at a reasonable price. **Company:** Canon (800/652-2666, www.usa.canon.com)
Company's estimated price: \$499

“You can shop online, but unless you actually take the camera in hand, you won't know whether it really performs well or fits the way you work.”

of five by seven inches, you would possibly want more. The answer has to do with cropping. Photographers routinely take wide shots of their subjects to avoid slicing off an arm, foot, or forehead—then they crop away all but the most essential elements and enlarge what is left. But if you start with a one-megapixel image, you can't spare many pixels without compromising image quality; with two or three million pixels, you can. High pixel counts likewise afford you more freedom to correct colors, retouch blemishes, and straighten crooked photos.

If saving money and energy is more important to you than getting a great image, a one-megapixel camera is the ticket. If you want the freedom to crop, straighten, and edit images, but you don't plan on printing many large photos, look for a two-megapixel model. And if you want all the flexibility money can buy, along with the ability to print large-format images, splurge on a three-megapixel model.

Picking the Best Camera

Once you've established the number of pixels you need, it's time to start looking for the camera that meets your specific needs. Even among cameras

in the same pixel category, features and quality levels can vary tremendously. So how do you find a camera that brings it all together? While we highly recommend our Editors' Choices—each one is a bona fide champ—we realize that they may not suit the needs of every photographer. Furthermore, technology has a habit of turning over more often than a rotisserie chicken; the cameras we recommend today may be gone tomorrow.

You can shop online until pictures and specifications are permanently imprinted on your retinas. But if you don't actually take the camera in your hands and put it through its paces, you won't know whether it really performs well or fits the way you work. Based on my years of experience with digital cameras, the nine steps I take to evaluate every new model are as follows.

1. Turn It On Make sure the camera is easy to power up. Note how long the process takes—you don't want to miss a good picture because you're waiting for your camera to turn on or because you have to wade

through a series of on-screen questions before you can use it. Also check that the lens extends successfully and doesn't get stuck if the cap is accidentally left on.

2. Set the Time All cameras have a time function to indicate when you shot each picture. Try setting the time and date. This will give you a feel for the camera's menu system—whether it's easy to use or sends you scurrying for the manual.

3. Turn On the LCD

Check that the LCD preview screen lights up automatically when you turn on the camera, or that the display button is easy to find—you don't want to hunt around for a button when you're ready to start shooting. Watch the screen as you move the camera around. The LCD screen should provide a continuous view of the world around you. Avoid cameras with LCD images that appear grainy and jerky—they'll make it hard to frame your shots correctly. If the LCD is filled with scads of technical data, make sure you can hide it for a better view of your picture.



TWO MEGAPIXELS (CONTINUED)



Samsung
Digimax
210SE



Toshiba
PDR-M61



Canon
PowerShot G1



Casio
QV-3500EX



Epson
PhotoPC
3100Z



Fuji
FinePix 6800
Zoom

THREE MEGAPIXELS

THE TEST

All digital cameras are not created equal. They come in different sizes, with different menus, and with a mind-blowing variety of features. The most important difference, however—output quality—can also be the hardest to inspect while you're standing in a camera store. That's why, in addition to testing each of our digital cameras for speed and usability, Macworld Lab cast a critical eye on the pictures they produced. We started by taking several photographs—indoors and outdoors—with each camera. We then printed the best images from each model on an Epson Stylus Photo 780, with no image correction. A panel of experts judged the results' sharpness, contrast, and color fidelity, as well as the quality of the flash lighting. Of course, everyone does not agree on what a perfect image looks like. In case you'd prefer to make up your own mind, we put test images from all of the cameras online (www.macworld.com/2001/11/features/cameras_bg.html). These are some of the things that we looked for:

4. Shoot a Few Pictures You should test the camera's autofocus abilities. Take a few shots of a subject positioned against a cluttered background, and see whether the focus locks on the subject or drifts to other



Bad: The Casio QV-3500EX



Good: The Fuji FinePix 6800 Zoom

Attention to Detail To see whether the cameras could accurately capture color and detail, we photographed a still life presenting a variety of colors and textures. Notice that the image from the three-megapixel Casio QV-3500EX suffers from an unsightly green cast (left). The Fuji FinePix 6800 Zoom, from the same group, produced more-attractive colors and sharp edges (right).



Bad: The Olympus Camedia Brio D-100



Good: The Canon PowerShot A10

Catching the Light To test each camera's flash performance, we used fill flash to photograph a woman positioned in shade with daylight beyond. The fill flash from the one-megapixel Olympus Camedia Brio D-100 was too dim and left our subject buried in the shadows (left). But the Canon PowerShot A10 properly brightened our model and minimized shadows without washing the image out (right).

objects in the scene. Note how close to the subject you can get and still focus accurately. Many cameras include a macro button that you can use when your subject is less than a foot away.

While you're taking pictures, make sure there's no noticeable delay between when you press the shutter button and when the camera takes the picture—a lot can happen in a sec-
continues



Kodak
DC4800
Zoom



Kyocera
Finecam S3



Olympus
Camedia C-3040
Zoom



Ricoh
RDC-7



Sony
Mavica
MVC-CD300



Toshiba
PDR-M65

PHOTOGRAPHY AT ITS BEST

SEVEN YEARS AGO, I began using digital cameras, and I haven't touched a roll of film since. Without film, after all, I never have to worry about development costs, and I can see my photos immediately. So it's a good thing my wife and I waited until last year to have our first child. Otherwise, the boy's formative years would have been immortalized in the grainy, indistinct, 640-by-480-pixel dreck of early digital cameras. Instead, our wise son waited until three-megapixel cameras came onto the scene; these cameras offer crisp, richly detailed, high-resolution photos we'll continue to treasure into our old age—assuming, of course, we can find our glasses.

much energy on the core task of picture-taking. A few years ago, a typical digital camera had a fixed lens, with no ability to change focus or zoom. Now, every three-megapixel camera we reviewed offers autofocus and an optical zoom—ranging from 2× in the Kyocera Finecam S3 to 3× for the others. All cameras except the Kodak DC4800 Zoom, Sony Mavica MVC-CD300, and Toshiba PDR-M65 permit you to adjust the focus manually. Sadly, not all do a wonderful job of it—the Epson PhotoPC 3100Z and Kyocera Finecam S3 force you to select from fixed settings—and none provides anything as practical as a manual focus ring.

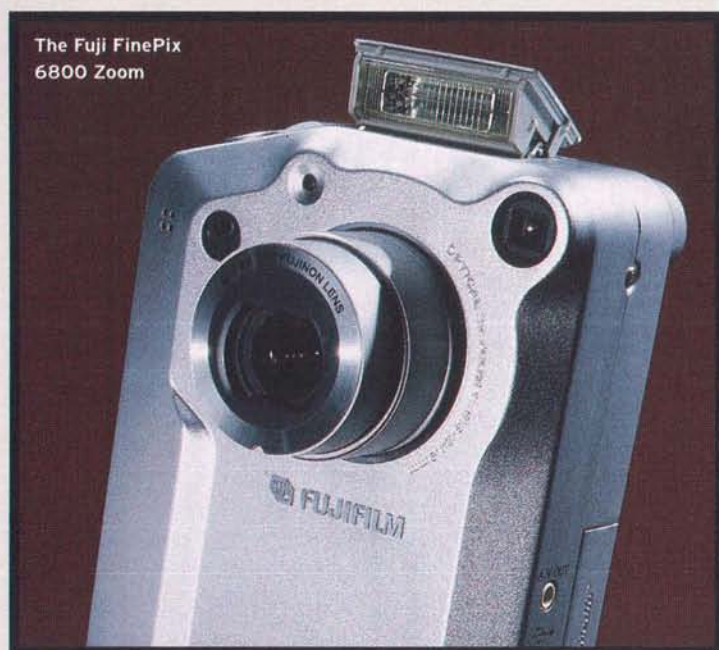
Light sensitivity has also improved. The Casio QV-3500EX, in particular, boasts ISO ratings as high as 500 (the other cameras top out at 400). But don't expect your camera to always exploit the entire range. For example, on Canon's PowerShot G1, you can manually raise the ISO to 400, but when you're working in the Auto mode, it floats between 50 and 100—best suited to sunlight and flash.

Image Quality

Despite having three million pixels at their disposal, not all of these cameras shoot gorgeous pictures. Of the ten cameras, the real standouts in image quality were the PhotoPC 3100Z, FinePix 6800 Zoom, and DC4800 Zoom. All three delivered bright photographs with excellent detail in the highlights and shadows, particularly under controlled lighting. The FinePix 6800's images were the warmest, with rich reds and yellows. While I also liked the colors from the Olympus Camedia C-3040 Zoom, it had a tendency to blow out highlights, turning large portions of skies and other bright backgrounds to white space. The worst of the images came from the Toshiba PDR-M65 and Casio QV-3500EX cameras. The PDR-M65 produced distinctly blue images with muted contrast, while the QV-3500EX turned out photographs so dark that they looked as though they had been shot through a pair of sunglasses.

Design and Usability

A camera's physical design is almost as important as the quality of the images it produces. A prime example of camera design at its best is the Finecam S3. Slightly smaller than the standard Apple Pro Mouse, the Finecam S3 is the tiniest (though not the lightest) digital camera around. Its rechargeable battery—which is roughly the size of a thick stick of gum—not only is easy to load and unload, but also charges while inside the camera (as do those for



The Fuji FinePix
6800 Zoom

Macworld Lab examined ten of the three-megapixel family's newest members, which range in price from \$499 to \$1,000 (see "26 Digital Cameras Compared"). Conspicuously absent from the group is any camera from the often-praised Nikon, which recalled a prerelease model of its Coolpix 995 before we could test it, citing technical problems. What remains is a collection of impressive high-resolution shooters—most of which outpace anything available two years ago—and one camera, the \$899 Fuji FinePix 6800 Zoom, that outpaces the rest in performance and value.

The Right Tools

Photographs are a camera's only legacy. So it's refreshing to see these camera makers expend so

Straight Shooters

Macworld
LAB TEST

Best results in bold.		MOUSE RATING	SPEED		IMAGE QUALITY			
■ Shorter is better. ■ Longer is better.			Seconds to Power Up	Pictures Taken in 30 Seconds	Color Fidelity	Contrast	Sharpness	Fill Flash
●●● Excellent ●● Acceptable ● Poor								
Canon PowerShot G1	●●● 1/2	■ ■						

the PowerShot G1, FinePix 6800, and Mavica MVC-CD300). Best of all, its postage-stamp-size 16MB MultiMediaCard ships with its own reader—no software required. In contrast, most of the other cameras use CompactFlash or SmartMedia cards for which you have to purchase readers or, in many cases, install special driver software.

The PhotoPC 3100Z, DC4800 Zoom, and Camedia C-3040 Zoom get high marks for self-evident menu systems that let you change settings with a minimum of fuss. To gain an instant appreciation for old-fashioned simplicity and predictability, you need only spend a day with the PowerShot G1 and its 12-setting dial, or the PDR-M65, which flickers on and beeps every time you swap memory cards. The PowerShot G1 and the Ricoh RDC-7 sport detachable LCD previews, perfect for framing shots from awkward angles. If you're looking for the best combination of style and substance, however, train your eyes on the FinePix 6800 Zoom. Though nearly twice as large as the wee Finecam S3, the FinePix 6800 boasts a simpler menu system and a more fetching facade.

The worst of the bunch to work with is the Mavica MVC-CD300, which records images to miniature CD-Rs that are such a chore to manage, they make film look convenient. What should be a simple act of swapping a CD-R between the camera and your Mac involves installing a driver and a sequence of initialization, finalization, and unfinalization that's so complex, the manual includes a flowchart on the topic. And the Mavica's reliance on CDs makes it bulky and, on occasion, maddeningly slow.

Special Features

When you purchase an \$800 device equipped with a complex circuit board, you have a right to assume it

will do more than simply capture still images. Three cameras—the QV-3500EX, PhotoPC 3100Z, and Camedia C-3400 Zoom—offer built-in settings to help you turn multiple pictures into a seamless panorama by lining up the shots just right. But when the PhotoPC takes the shots, it doesn't lock down the exposure and white balance, which means one shot may not blend well with the next.

Those same three cameras—plus the PowerShot G1, FinePix 6800 Zoom, and RDC-7—also permit you to shoot QuickTime or AVI movies at 320 by 240 pixels. Most of these cameras record 15 frames per second; the FinePix 6800 lags with only 10. All capture sound with the movie except for the QV-3500EX which has no microphone.

Macworld's Buying Advice

Many of this roundup's cameras would make satisfying choices—particularly the \$799 Epson PhotoPC 3100Z and the \$599 Kodak DC4800 Zoom. But the \$899 Fuji FinePix 6800 Zoom stood out from the rest for its top-notch picture quality and functionality. If your main concern is size, consider the tiny \$699 Kyocera Finecam S3, which also has some excellent convenience options.—DEKE MCCLELLAND

EDITORS' CHOICE

●●●● 1/2 **Fuji FinePix 6800 Zoom** This compact three-megapixel digital camera combines first-class picture quality with straightforward controls and a fun but functional collection of extras. **Company:** Fujifilm (800/800-3854, www.fujifilm.com) **Company's estimated price:** \$899

“Don't be swayed by high digital-zoom measurements. With digital zoom, the camera merely enlarges pixels without providing greater detail.”

ond. (A one-megapixel camera we tested paused the LCD preview as soon as the shutter button was pressed, making it impossible to follow a moving target.) Also note how long the camera takes to get ready for the next shot.

5. Test the Zoom The process of extending the zoom lens should be smooth and effortless. Is it difficult for you to frame and zoom at the same time? In comparing cameras, don't be swayed by high digital-zoom measurements. A digital zoom isn't a true zoom; the camera merely enlarges the pixels of the image without providing greater detail. It's best to evaluate a camera by its optical-

zoom measurement. And watch out for models that automatically switch from optical to digital zoom without warning you. On cameras with seamless zooming, check to see whether you can disable the digital zoom if you need to.

6. Use the Flash An ideal flash powers up automatically in dim light; avoid cameras that make you turn on the flash. Check that the flash is mounted high above the lens element, for even lighting, not close and to the side, which can produce washed-out images. Can you easily turn on the flash to fill in a backlit subject? Does the flash evenly fill in shadows, or does it cast harsh, uneven lighting?

7. View Your Photos After each shot, the camera should automatically preview your photo for a second or two. Following that, you should be able to review your pictures by switching to a play mode. Scroll back through the camera's stored images and see how easy it is to skip from one photo to another. Can you magnify a picture to take a closer look? Can you easily delete one or more photos without erasing them all? The camera should prudently confirm each deletion but not irritate you with warning after warning.

8. Transfer the Photos If you're in a store that has a computer available, ask to copy pictures to it from the

SIZING UP YOUR DIGITAL MEDIA

A roll of film is measured by the number of pictures it holds, but a camera's digital media card is measured by the number of megabytes it holds. This is because the exact number of pictures that a digital camera can store varies according to the size and quality of those images. For example, an 8MB card might hold four images or forty-eight.

Since most cameras ship with only a minimum amount of storage—a few cameras we looked at didn't include any—you'll probably want to invest in one or two extra media cards up front. Therefore, it's a good idea when choosing a digital camera to consider what type of storage you're investing in, and whether it will continue to meet your needs down the road.

FLASH RAM

By far the most popular type of storage is Flash RAM. Like the RAM in your computer, Flash RAM is small, lightning fast, and highly stable (because it involves no moving parts). Flash RAM comes in several different styles, sizes, and storage capacities.

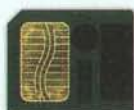
SmartMedia and CompactFlash The two most common types of Flash RAM cards are Toshiba's SmartMedia and SanDisk's CompactFlash. Both are small—less than a quarter the size of a floppy disk—but SmartMedia is the thinner.

Both media formats are highly reliable, but CompactFlash has the edge. Because the contact area of a SmartMedia card is exposed, you may wipe out your stored images

if you touch or rub this area. CompactFlash, on the other hand, is rock solid—I have stepped on a card without hurting data. CompactFlash also has the advantage in compatibility. SmartMedia has changed



Kodak
CompactFlash



Olympus
SmartMedia



Sony
8mm CD-R



Hitachi
MultiMediaCard



Sony
Memory Stick

camera, so you can inspect them in more detail. And if the store offers a printer, look at one or two images on paper. If it doesn't, ask to copy the image files to a disk or e-mail them to yourself so you can print them on your home printer.

9. Check Out the Manual Insist on a printed manual small enough to throw into a camera bag. If you're lucky, the manual will include an index; the next best thing is an extensive table of contents. And read through a section and make sure the manual is intelligible and doesn't read like a bad translation. Every camera has hidden features; only good documentation can bring them to light.

Worth the Effort This may sound like a lot to go through while you're standing in the middle of your local camera or computer store. But if it

ends with you finding the camera you really want, it'll be time well spent. Even if you plan to order your camera online, I recommend going to a store and physically holding the camera before you make your choice. A digital camera can be a considerable investment; you'll want to know that your camera will deliver the results and performance you demand.



The Last Word

Many types of computer hardware are commodity products—that is, all the models are based on the same mechanics, so it really doesn't matter which one you buy.

That's not true of digital cameras, however. Two may share the same type of menu system, storage medium, and lens, but you can almost always find more differences than similarities between them. Each digital-camera

model is, in most respects, a unique device with particular advantages and disadvantages. You can use the tips in this guide to help you identify your priorities in choosing a digital camera—and then, most importantly, you should *shop around*.

The bottom line is that you don't have to settle for a digital camera that's anything less than perfect for you. If you can identify a need and put it into words, you can almost certainly find a camera that more than meets that need. **m**

DEKE MCCLELLAND is the author of the forthcoming *Adobe Master Class: Designer Invitational* (Peachpit Press, 2001) and host of the DVD series *Total Training for Photoshop 6* (Total Training, 2001).

More Info: www.macworld.com/subject/cameras

Read digital-camera reviews and keep up to date on the latest news in digital photography.

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standards at least three times since it was introduced. As a result, a two-year-old card reader designed for an 8MB card won't recognize a present-day 32MB card. All versions of CompactFlash are compatible.

The highest-capacity SmartMedia cards can store as much as 128MB and sell for \$150. CompactFlash cards come in various sizes; the largest holds 512MB and costs \$500.

Memory Stick SmartMedia and CompactFlash aren't the only Flash RAM standards. About the size of a stick of gum, the Memory Stick is sold exclusively by Sony (800/222-7669, www.sonystyle.com). Consequently, Sony is the only vendor using the proprietary standard, so it's not compatible with many popular digital photo printers, card readers, and other devices. The largest-capacity Memory Sticks hold 128MB and sell for \$240—making them the costliest Flash RAM option.

MultiMediaCard Another type of Flash RAM gaining momentum is the MultiMediaCard—also called a Secure Digital (SD) card—which was developed by a consortium of high-tech vendors. This postage-stamp-size card makes SmartMedia look positively huge. And because it's already an established standard among other electronic devices such as cell phones and modern PDAs, the MultiMediaCard is broadly

compatible. Unfortunately, MultiMediaCards currently hold a maximum of only 64MB. They cost \$80.

MICRODRIVE

It's not truly a type of Flash RAM, but IBM's Microdrive (800/426-4968, www.storage.ibm.com) is the same size as CompactFlash and works with some of the same cameras. Basically a small hard drive, the largest Microdrive, at \$459, holds a whopping 1GB of data. None of the cameras that we reviewed ship with a Microdrive, but it's a good solution for photographers who plan to take a lot of pictures between downloads.

TRADITIONAL MEDIA

Sony's Mavica, the most popular digital-camera line ever, has been built around more-pedestrian media: first the floppy disk and now the 8mm CD-R. While these mini-CDs hold a large number of images for a very low cost (a 150MB rewritable disc costs a mere \$10), they are several times larger and slower than Flash RAM media, and without a special adapter, they can't be used with slot-loading drivers. The other disadvantage is that you have to install software and perform an additional operation to read a Mavica CD on a Mac.

Make AirPort Cross Platforms

BY CHRISTOPHER BREEN

Anyone who's had the opportunity to use AirPort understands that this form of wireless networking is one of the most elegant and exciting technologies to come from Apple in ages. With little more than two AirPort-equipped Macs, you can transfer files between computers in different rooms of your house and surf the Web from your back porch, without being constrained by wires.

But why should Mac users have all the fun?

We're well aware that the world is full of PCs and that your wireless setup may include one. Maybe a misguided loved one, who refuses to abandon her laptop PC, would like to surf the Web and check her e-mail via your Mac's broadband Internet connection—or perhaps she'd like to use file sharing to swap MP3s with you. Your two-platform world can indeed be a harmonious one if you bring that Windows PC into the AirPort mix.

We'll show you how to create a dual-platform wireless AirPort network with which you can not only swap files among *all* your computers (we'll tell you how to do it with the wired ones, too) but also share your broadband Internet connection.

First we'll create an example AirPort-based network for a group of Macs, and then we'll guide you through configuring a PC's hardware and software to join that network. If you've already established your AirPort network, you can skip to step 5, which gets right into the PC-related tasks, including adding a wireless device.

Consult "What You'll Need" for a checklist of supplies (which may vary depending on the Mac and PC models in your household). **m**

Contributing Editor CHRISTOPHER BREEN's office includes a bunch of Macs and one PC, which is quarantined via a wireless network connection.

What You'll Need

- At least one **Mac running Mac OS 9**, with an AirPort card. We've used a new iBook in our example network, but any AirPort-compatible Mac will do.
- One (or more) **Ethernet-equipped Mac running Mac OS 9** (optional). We've used a Power Mac G3 in our example network; your network may include a similarly non-AirPort-compatible Mac.
- An **AirPort Base Station** (\$299; Apple Computer, 800/692-7753, www.apple.com), which acts as a wireless router to connect all your computers to the Web and to one another.
- An **Ethernet hub**, such as a four- or eight-port hub made by LinkSys (949/261-1288, www.linksys.com) or 3Com (408/326-5000, www.3com.com). Four-port hubs usually cost less than \$40.
- A **broadband modem**.
- **Category-5 Ethernet cables**. Also known as Cat-5 cables, they connect Ethernet-equipped Macs to the Ethernet hub, and provide the connections between your hub, AirPort Base Station, and broadband modem. They generally cost less than \$5.
- At least one **PC running Windows 95, 98, ME, or 2000**, with a free ISA slot, PCI slot, or USB port (Windows 98, ME, or 2000 is required for the USB connection).
- A Windows-compatible, Wi-Fi-certified, IEEE 802.11b-compliant **wireless networking device**, such as a member of Agere Systems' Orinoco WaveLAN family of wireless networking products (800/372-2447, www.agere.com). See step 5 for advice on which ones to choose. Desktop PCs will require either a USB wireless device or a PCI- or ISA-based wireless adapter, and a PC Card. Laptop PCs require a PC Card. The total cost of these devices ranges between \$50 and \$220.
- **Miramar Systems' PC MacLAN** (\$199; 800/966-2432, www.miramar.com) installed on any PCs in your network; it's necessary for sharing files between Macs and PCs.

More Info: www.macworld.com

For a list of other Macworld how-to articles, reviews, and news about wireless networking, go to www.macworld.com and enter **wireless** in the Search box.

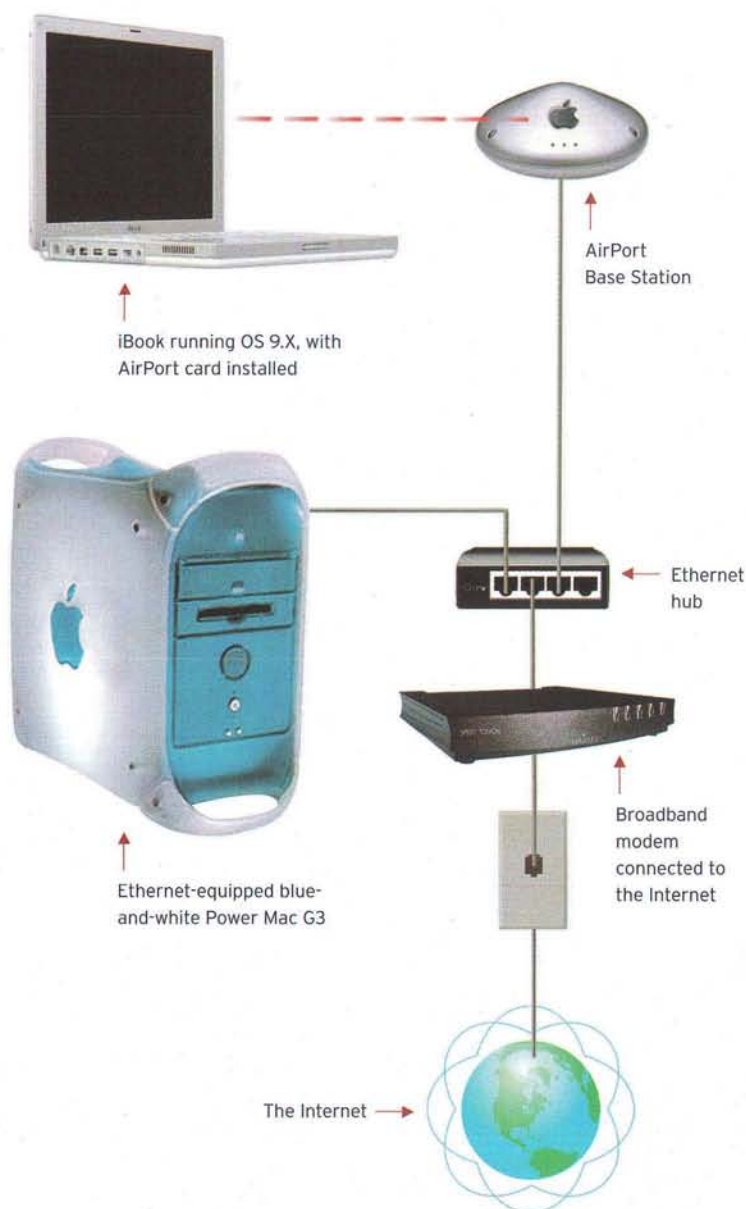
LINK

1

Set Up Your Mac Network Begin by making the proper physical connections between the Macs on your network. This includes not only installing AirPort cards but also running cables between your non-AirPort wired Macs and your DSL, cable, or satellite broadband connection.

2

Copy Settings to Your AirPort Base Station Configure the Base Station to communicate with the Macs and share your broadband Internet connection. Have ready your TCP/IP settings, given to you by your ISP when you set up your broadband service.



Using standard Category-5 (Cat-5) Ethernet cables, connect the AirPort Base Station, the blue-and-white Power Mac, and the DSL modem to free ports on the Ethernet hub. Be sure to use the hub's standard Ethernet ports and not the port marked "uplink." (The uplink port is used for connecting multiple hubs.)

Configure the AirPort-equipped Mac to log on to your ISP. Then use the AirPort Setup Assistant (in your Mac OS 9.X volume: Applications: Extras: AirPort) to copy those settings to the Base Station. For a network like the one in our example, you'd set up the Base Station this way:

With the latest version of Apple's AirPort software (1.3.1, as we go to press) running, launch the AirPort Setup Assistant on the AirPort-enabled iBook, and click on the Set Up An AirPort Base Station option. In the Internet Choice window, click on Yes to indicate that the iMac is configured to access the Internet.

If your ISP requires Point-to-Point Protocol over Ethernet (PPPoE), click on Yes in the PPPoE window. Otherwise, click on No. In the Internet Access window, select the TCP/IP settings you want to copy to the Base Station **A** and click on the right arrow.



In the next window, name your network (this name is your network's SSID, or Service Set Identification) and provide the password you'll enter when you need to configure the AirPort network with the AirPort Admin Utility. Finally, click on Go Ahead to install these settings on the Base Station. Wait while the settings are transferred to the Base Station.

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3

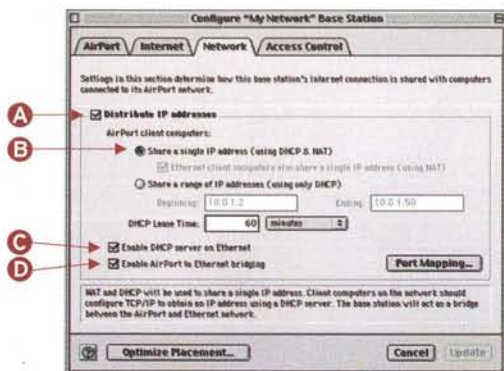
Set Up Your Base Station and Macs to Share an IP Address The AirPort Base Station can operate as a DHCP (Dynamic Host Configuration Protocol) server—a device that allows many computers to access the Internet via a single IP address.

Launch the AirPort Admin Utility from the AirPort-enabled iBook (also found in the AirPort folder), select your AirPort network, and click on Configure.

Access the Configuration window by entering the Base Station password that you created in step 2, and then click on the Network tab. Choose the Distribute IP Addresses option **A** and the Share A Single IP Address (using DHCP & NAT) option **B**.

When these options are selected, your Base Station acts as a router—the contact point between your network and the Internet. As far as your ISP knows, you're using the single IP address allotted you from a single computer. In reality, the Base Station creates an internal network—distributing IP addresses to each computer within that network—that can share the single IP address provided by your ISP.

Our initial setup has a Mac connected to the network via an Ethernet cable. Because this Mac will access the Internet *and* the wireless network, choose the Enable DHCP Server On Ethernet option **C** and the Enable AirPort To Ethernet Bridging option **D**. Activating these options allows computers connected via Ethernet to join the network. If your network lacks such a wired connection, do not select these options.



4

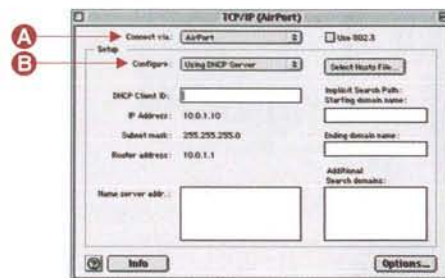
Configure Your Macs for the Network

Now that your Base Station is ready to share an IP address among your Macs, your Macs must be prepared to use the Base Station and its settings. Here's how to set up the Macs on your network to share that single IP address.

On each Mac, open the AppleTalk control panel and, from the Connect Via pop-up menu, select the method by which your Mac is connected to the Base Station—AirPort if your Mac has an AirPort card, as does the iBook, and Ethernet if your Mac is wired to the hub, as is the Power Mac. Close and save.

Open the TCP/IP control panel, and select Configurations from the File menu. Select the appropriate configuration in the resulting window, click on Duplicate, create a new configuration and name it, and then click on the Make Active button.

In the TCP/IP window, be sure that the Connect Via pop-up menu **A** displays the connection protocol appropriate for your Mac (AirPort or Ethernet). From the Configure pop-up menu, select Using DHCP Server **B**.



Don't be concerned with the empty fields. The information needed to establish your Internet connection, such as IP address and subnet mask, is stored in your Base Station. To confirm this, open the AirPort Admin Utility and click on the Internet tab.

Now log on to your AirPort network with the iBook by selecting the network's name from the AirPort control strip module.

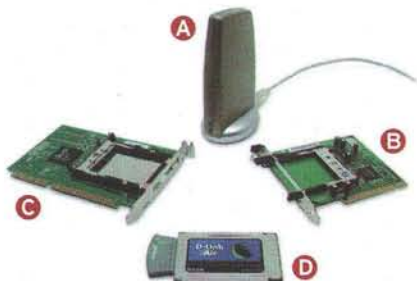
Your wired Mac will join the network automatically.

5

Choose Your Wireless Device The wireless device you use will depend on the type of PC you have and whether it has PCI or ISA slots, USB ports, PC Card slots, or a combination of these. Also, some wireless devices work better than others.

There are four ways to connect a wireless client to your PC—via an ISA (Industry Standard Architecture) slot, a PCI slot, a USB port, or a PC Card. If you have a PC laptop, the obvious choice is a wireless PC Card. But if you have a desktop PC manufactured in the past couple of years, it's likely that your computer has ISA, PCI, *and* USB. Which should you choose?

If your desktop PC carries USB ports, purchase a USB-compatible wireless device such as the Orinoco USB Client **A**. These devices are less expensive than their ISA or PCI counterparts. USB wireless devices are also easier to install and configure. Most PCs carry both ISA and PCI slots. If your PC does not have USB and has only PCI slots, your choice is simple—get a PCI adapter, such as the D-Link PCI Wireless adapter **B**.



If your PC sports both kinds of slots, get an ISA adapter, such as the Orinoco ISA Adapter **C**. Wireless devices attached to the ISA slot in a PC that has both ISA and PCI slots work more reliably with AirPort.

These PCI and ISA adapter cards are not wireless devices themselves; they provide only a place to install a wireless PC card—a WaveLAN Silver or D-Link PCMCIA Wireless LAN PC card **D**, for example. To complete the connection, you must add such a PC wireless card. To ensure compatibility, use an adapter and PC Card from the same company.

6

Add a USB or PCI Device to Your PC

Your Macs should now be able to communicate with one another as well as with the Internet over AirPort. Now it's time to add the PC. How you do so depends on the kind of PC wireless device you chose in step 5.

Before connecting a wireless device to your PC, open the device's manual and carefully follow the installation instructions. Remember, this is Windows, and installing hardware under Windows can be tricky.

You'll probably have to install drivers and a configuration manager prior to installing the hardware itself. These drivers must be in place in order for Windows' Plug-and-Play feature to recognize the device. The necessary software should be on the CD or floppy disk that accompanies the device. You'll install it using an installation wizard like this one for Orinoco Client Manager.



The wizard will offer to locate the most appropriate available drivers. In some cases, you should allow this to occur; in others, you may need to direct the installer to a particular folder on the installation disk **A**.



The manual that accompanies your wireless device will tell you the best way to proceed.

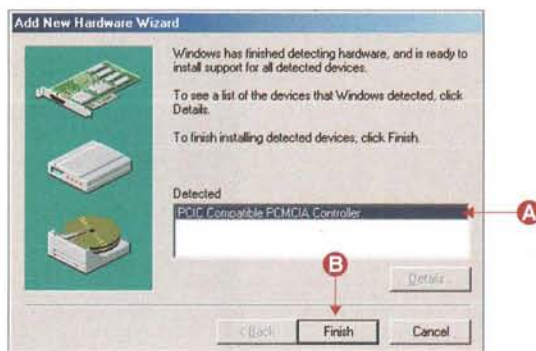
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Add an ISA Adapter ISA wireless adapter cards are not recognized by Windows' Plug-and-Play feature—meaning that you can't simply install a driver and expect Windows to recognize the card when you insert it into the ISA slot. Instead, you must manually configure such devices.

For Windows to recognize an ISA adapter, you must first open up the PC and insert the adapter into a free ISA slot. Then run Windows' Add New Hardware control panel (select Control Panel from the Start menu's Settings command and double-click on Add New Hardware in the resulting window).

The Add New Hardware Wizard will ask if you'd like Windows to automatically detect any new system hardware. Click on Yes and then on the Next button. When Windows has finished searching for hardware, click on the Details button. You'll see that Windows has found a PCIC-compatible PCMCIA Controller card **A**.



Select this item, and click on the Finish button **B** to install the driver for the adapter. Windows will request that you restart your PC. Click on OK to restart.

With the adapter in place and recognized by the PC, insert the PC card into the adapter. The Add New Hardware Wizard will appear.

When the window that asks "What would you like Windows to do?" appears, insert the installation disk (CD or floppy) that came with your wireless PC Card. Select Search For The Best Driver For Your Device (Recommended). Windows will check the installation disk for PC Card drivers and install them. Click on Finish when the installation is complete and, if Windows asks you to, restart your PC.

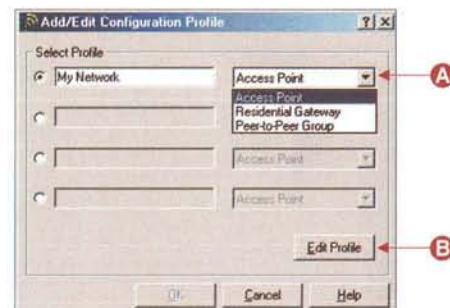
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Configure the Wireless Device to Become Part of the Network Regrettably, wireless PC devices don't come with configuration applications as intuitive as Apple's AirPort Setup Assistant—these applications won't automatically seek out and join your AirPort network.

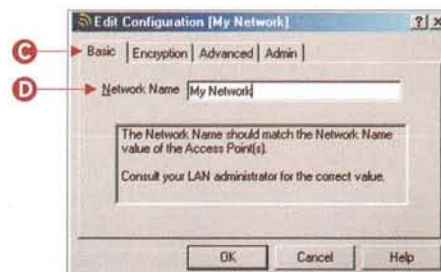
Orinoco Client Manager—the wireless configuration application that comes with Orinoco WaveLAN wireless devices—is typical of most of these programs. Here's how to set it up:

Click on the Programs item in the Start menu, locate the Orinoco folder, and select the Client Manager application within.

When the Client Manager appears, select Add/Edit Configuration Profile from the Actions menu. In the resulting Select Profile window, be sure that Access Point is selected in the right menu **A**; then click on Edit Profile **B**.



In the Edit Configuration window, select the Basic tab **C**, and in the Network Name field **D**, enter the *exact* name of your AirPort network, or SSID, which you established in step 2 (capitalization counts).



Click on OK to leave the Edit Configuration window and OK again to close the Select Profile window. The Client Manager will search for the network with the SSID you've provided and join that network when it's found.

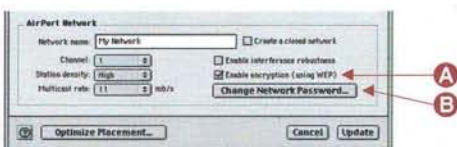
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Enable WEP Encryption AirPort supports 40-bit WEP (Wired Equivalent Privacy) key encryption (sometimes referred to as 64-bit encryption, even though the key is only 40 bits)—a scheme that attempts to keep others from “listening in” on your wireless network.

10

Share Files The simplest way to share files between a Mac and a PC is with Miramar Systems' PC MacLAN. PC MacLAN lets you mount Windows volumes on your Mac from the Chooser and access Mac volumes on the PC in Windows' Network Neighborhood.

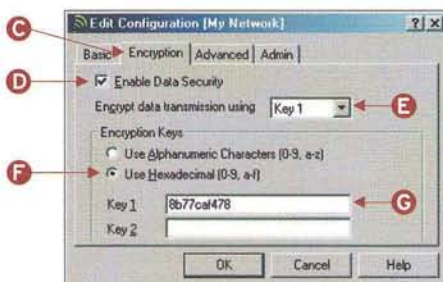
Enable encryption on the Base Station by launching the AirPort Admin Utility from the AirPort-enabled iBook. Go to the AirPort pane of the Configuration window, and select Enable Encryption (Using WEP) **A**. Click on the Change Network Password button **B**, and in the next window, enter and confirm your password. Click on the Update button.



Click on Configure, enter the configuration password, and select Equivalent Network Password from the Base Station menu. The string of ten characters that appears in this window is the WEP password your PC's Client Manager will use. Write it down.

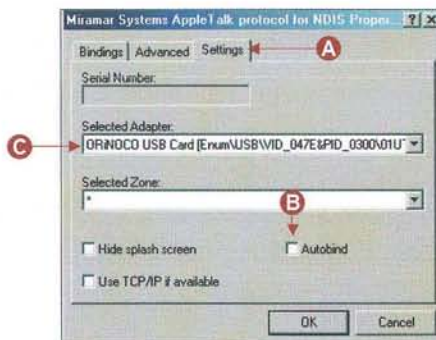
On the PC, launch Client Manager and select Add/Edit Configuration Profile from the Actions menu, click on the Edit Profile button, and click on the Encryption tab **C**. Select the Enable Data Security option **D**, choose Key 1 from the Encrypt Data Transmission Using menu **E**, select the Use Hexadecimal (0-9, a-f) option **F**, and in the Key 1 field **G**, enter the 10-character WEP password.

Click on each window's OK button to establish encrypted communication between the PC and the Base Station. If you have many PCs in your network, repeat this process for each.



Install PC MacLAN, and restart your PC. On restart you'll likely see an error message indicating that PC MacLAN was unable to register your PC on the network. To fix this, open the PC's Network control panel (choose Start: Settings: Control Panel, and then double-click on the Network control panel), select the Miramar Systems AppleTalk Protocol For NDIS entry, and click on the Properties button.

In the next window, click on the Settings tab **A** and deselect the Autobind option **B**. Select your wireless device from the Selected Adapter pop-up menu **C**. Click on OK in the open network windows, and restart the PC when Windows asks you to. Launch PC MacLAN File Server, and click on the Start Server button.



To share files on the PC, click on PC MacLAN's Users And Groups button, click on New, enter a name and password, and assign yourself access privileges. Click on the Share Folders button, select the folders or volumes you want to share, and choose who can share these files and volumes. Click on Done.

To access your networked Mac volumes, double-click on Network Neighborhood on the PC's desktop. To work with your PC files from the Mac, select them from the Chooser.

Now you're all set to share files, surf the Web, and send e-mail wirelessly on a mixed-platform network.

Print Publishing Secrets

When you send digital images to a printing press, the color files must be in CMYK format—but that doesn't necessarily mean the images should start out that way. Editing files in RGB mode can have advantages, while some editing tasks are best done in CMYK, so it's wise to be comfortable with both modes. We'll explore which mode to use when, and how to convert from one to the other.

CMYK All the Way?

If you're lucky enough to work in a closed-loop, all-CMYK workflow, where you know the printing conditions at the time you scan your images, stick to that format. If you start out with CMYK scans, converting them to RGB for editing purposes is a mistake—you'll lose more than you'll gain. However, the circumstances that call for an all-CMYK workflow—always printing to the same press, with the same inks, on the same paper stock, with no other use for the image—are becoming rarer.

Strike One It's crazy to work in CMYK if you don't have a clear idea of your job's printing conditions, because CMYK separations that work well on a sheetfed press can produce mud on a web press, and worse than mud on newsprint. Unless you know which inks and paper the printer will use for your job (and can therefore adjust for them), your image may wind up looking quite different from what you envisioned.

Strike Two Designers often put images to multiple uses: they may need an RGB version for the Web, a CMYK one for print, and even multiple print versions. But turning a CMYK scan into an RGB file typically produces poor results on the Web—monitors can display many colors that CMYK print can't reproduce, and CMYK print contains a few colors that monitors can't reproduce.

RGB Only?

The other extreme—working entirely in RGB and then putting your RGB image through an automated conversion



process before printing—won't give you good results either. Great color takes intelligent human intervention. The RGB-to-CMYK conversion that can do justice to both a pastel early-morning landscape and a saturated tabletop product shot simply doesn't exist and probably never will.

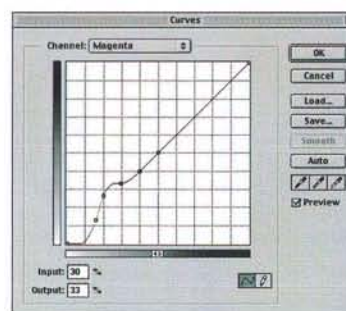
The Right Times for RGB

It's a great deal easier to correct color casts in RGB than in CMYK. One of the wonderful properties of Adobe Photoshop's RGB working spaces is that

equal values of red, green, and blue always produce a neutral gray. You can fix the vast majority of color problems by finding an image element that you know should be neutral and then using the Curves feature to make it neutral. When you do so, the rest of the colors simply fall into place. It's much more difficult to tweak four curves to produce the unequal amounts of cyan, magenta, yellow, and black that result in a neutral color.

Compositing and image manipulation are also easier in RGB. In CMYK, many Photoshop filters, including Lens Flare, Lighting Effects, and all the Artistic and Texture filters, don't work at all. Others, such as Emboss, produce unpredictable results.

In RGB mode, you can avoid violating ink limits. No press can handle 100 percent of all four inks. At best, overinking will cause images to look muddy. At worst, it causes the paper to disintegrate, making a mess on a sheetfed press and creating a life-threatening situation on a web press if the paper breaks! Most presses work best



CMYK Color Tweaks A color's detail is always carried by its opposite color. In CMYK, I gave the green foliage and blue water in the original photo (far left) some snap (middle) by using Photoshop's Curves tool (far right) to increase the contrast in the magenta and yellow channels, respectively.

when they reproduce the darkest tones using somewhere between 240 percent (for newsprint) and about 340 percent (for high-quality sheetfed printing) total ink. When you work in RGB, your CMYK conversion settings determine your total ink limit. But there's no ink-limit safeguard in CMYK.

Probably the best reason to make as many edits as possible in RGB before converting an image to CMYK is that when you convert the image, it loses about half a bit of potentially valuable data. These losses aren't obvious at first, but the more you edit the image, the likelier you are to see posterization or color banding.

Get the Best of Both To enjoy the best of both the RGB and the CMYK worlds, do most of your editing in RGB, but check your work as a CMYK simulation (use the Proof Colors tool in Photoshop 6, and CMYK Preview in older versions). An image on a monitor will never exactly match an image on paper, but it can come very close—probably as close as traditional proofs (which seldom precisely match the press sheet). Photoshop's CMYK previews will show you the more muted color that conversion to CMYK inevitably produces. (For more on soft-proofing, see "Show Your True Colors," *How-to*, April 2001.)

When CMYK Fits the Bill

Some types of editing you can do only in CMYK, and other types are easier in CMYK than in RGB. The black plate in CMYK has a major effect on the overall image, and some powerful techniques rely on manipulating the black channel, which isn't possible in RGB.

For example, I often use Photoshop's Channel Mixer tool to take black out of some flesh tones: I set the output channel to black, subtract some magenta and a bit more yellow, and then increase the black value to slightly more than 100 percent to preserve the tonal values (a typical setting might be Magenta -4, Yellow -12, and Black +108).

Another classic black-plate trick can improve head shots, where you want to sharpen hair, eyes, and eyelashes without emphasizing skin texture. Sharpening only the black channel while leaving the cyan, magenta, and yellow channels soft makes the hair and eyes snap without oversharpening the skin or lips.

In CMYK, making subtle adjustments using the Hue/Saturation tool is much easier than it is in RGB, where the tool manipulates light and is rather blunt. In CMYK, you manipulate ink percentages with surgical precision.

CMYK also makes it easier to control detail in red, green, and blue objects by manipulating the opposite color: in a green object, the magenta plate holds most of the detail; in a red object, it's the cyan plate; and in a blue object, the yellow plate. (The same principle applies in RGB images, but it works instead for cyan, magenta, and yellow objects, which seem to be a lot less common than red and green ones.) So to increase detail in green foliage, you increase the contrast on the magenta plate. I usually use the Curves tool to do this—the steeper the curve, the greater the contrast. To get the same results in RGB, you'd have to adjust both the red and blue curves, and that takes more work than adjusting a single curve, as you do in CMYK.

Conversion-Process Tips

When you convert an image to CMYK, Photoshop will ask you if you want to flatten it. You do. Layer blending that works beautifully in RGB may look very different in CMYK.

It's always a good idea to save and archive the edited, layered RGB file and then convert a duplicate to CMYK. If your client suddenly decides that the image you prepared for a newspaper ad would look great in an annual report, you'll have a much easier time getting a good sheetfed CMYK separation from the edited RGB file than you would from the newsprint separations. Ditto if the ad runs in Japanese magazines, which use inks that are substantially different from those in U.S. publications.

Ambidextrous Image Editing

If you handle most of your editing in RGB, you'll find that fine-tuning is all you have to do after converting an image to CMYK. And it's this fine-tuning that will make the difference between color that's acceptable and color that makes your clients say "Wow!" **m**

Contributing Editor BRUCE FRASER is a self-confessed color geek and a coauthor of *Real World Photoshop 6* (Peachpit Press, 2001). You can reach him at bruce@pixelboyz.com.

Web Publishing Secrets

All Web designers share two goals: to build Web pages quickly, and to keep those pages fast and lean so visitors to their sites don't have to wait. With even a basic understanding of Cascading Style Sheets (CSS), you can achieve both of these goals. And by using techniques outlined in this column to raise your CSS skills to the next level, you'll be able to build fast-loading pages in record time.

CSS Basics

CSS gives Web designers a wide range of formatting options not possible with HTML alone; a CSS style can include margin settings, first-line indents, text leading, and precise border control.

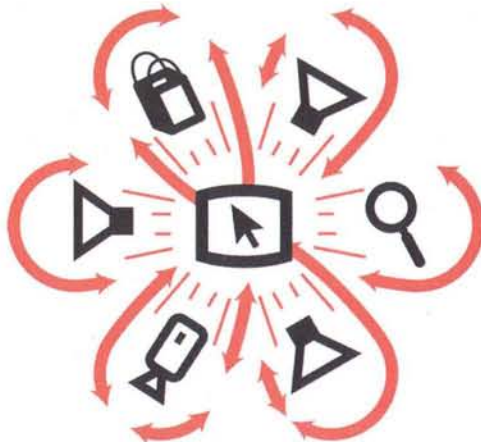
CSS pages tend to load more quickly, too. CSS lets you format text without the `font` tag and can more succinctly define attributes for other HTML elements, such as tables and images.

At its root, a CSS style simply tells a Web browser how to display a particular piece of an HTML document. The two main types of CSS styles—class styles and tag selectors—let you control how formatting is applied.

Class Styles As you can with styles in programs such as Microsoft Word and QuarkXPress, you can name class styles and then apply them manually. For example, to format the main text of a Web page, you could create a class style named `bodyCopy` that specified font, color, leading, and other formatting options. To apply it to a paragraph, you'd simply add a small amount of code to the appropriate tag: `<p class="bodyCopy">`.

But although class styles allow you to format just the page elements you choose, they also require additional code and extra work. Adding `class="bodyCopy"` to a single paragraph tag isn't too time-consuming, but formatting hundreds of pages in this way certainly is.

Tag Selectors There is another method—tag selectors redefine the behavior of a page's HTML tags. By creating a style for the `p` tag, for example, you could make all paragraphs on a page display in red text that is 36 pixels



tall. With tag selectors, instead of making up a name for the style, you use the name of the tag—for example, `td` for a table cell or `p` for a paragraph.

In addition, you don't need to apply the style manually; Web browsers *automatically* apply the tag selector's formatting to *every* section of text contained within that tag.

Although automatic formatting can be a time-saver, a tag selector's approach isn't always desirable. You might not want

every paragraph to look the same. You may need to divide a Web page into different sections—for example, a main content area, and two sidebars that have smaller text than the main area has.

If you know how to use a CSS refinement called *contextual selectors*, it's easy to take advantage of the benefits offered by class styles and tag selectors while avoiding their pitfalls.

Contextual Selectors to the Rescue

A contextual selector allows you to limit the application of a style to HTML in a specific context. For instance, you can create a style that formats the text contained within a `p` tag as blue and 9 pixels tall *only* when that text appears within a sidebar. How does a Web browser know the tag is inside a sidebar? You need to tell it—by using a class style to define that page area's context.

For an example of a common table-based page layout, see "Context Is Crucial": the beige box on the left side of the page is a single table cell, while the white box on the

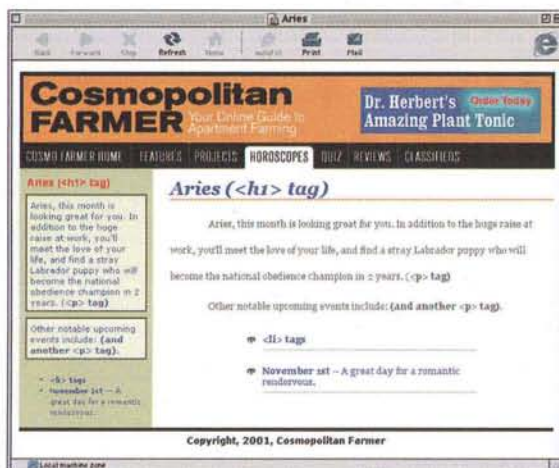
right is another cell, used for the page's main content. By creating a class called "main" and applying it to the `td` tag of the main content cell, you set the context for all other HTML placed inside that cell. Now a browser will consider any tag inside that cell to be within the context of the main style. This approach combines the selective control of class styles and the automated formatting of tag selectors.

Creating a Contextual Selector

It's no more difficult to create a contextual selector style than it is to create a class style or tag selector. Simply add the context (which class or tag the style must appear within) when defining the style. To create two styles—main and sidebar—for the layout cells of a page, and two styles for paragraphs that appear inside the cells, you might use this code:

```
<style type="text/css">
.main { background-color: #FFFFFF }
.sidebar { background-color: #CCCC99 }
.sidebar p { font-size: 10px; color: #000099 }
.main p { font-family: Georgia, Times, serif; font-size:
12px; color: #FF0000 }
</style>
```

The `.sidebar p` code is a contextual selector and indicates that the style should apply to `p` tags only when they're inside a segment of the document defined as `class=sidebar`.



Context Is Crucial The HTML code in the table cell on the left is *exactly the same* as the code in the cell on the right. Only their contexts differ; a cell that has a class style applied to it contains the sidebar content. Therefore, all of the tags in that cell are in the context of the sidebar style.

With this approach, you must create styles for each context on a page; this example would call for a set of contextual-selector styles for each tag that appears within the sidebar cell, and a set of regular styles for each tag in the rest of the page.

After you complete this initial style-sheet building, your Web pages will nearly format themselves. Once you've set the context—applying the sidebar class to the left table cell, for instance—you can just type or paste text into the cell. The only formatting you'll need to do is applying the appropriate tag—`h1` for heading 1, for example. The Web browser takes care of the rest.

There's an added benefit—if you copy text from the sidebar and paste it into the main content cell, you won't need to do any formatting. As the context of that text changes, so does the style used to format it, making it easy to reuse HTML content in other parts of the page or elsewhere on your site without having to reformat it.

CSS provides designers with previously unavailable power to control the look of Web pages—and looking good can go hand in hand with working smart. Using these simple steps, you can take advantage of the space- and time-saving benefits of contextual selectors. ■

DAVID SAWYER MCFARLAND is the president of Sawyer McFarland Media (www.sawmac.com) and the author of *Dreamweaver 4: The Missing Manual* (Pogue Press/O'Reilly, 2001).

Creating Contextual Selectors in Macromedia Dreamweaver and Adobe GoLive

These visual HTML editors have slightly different methods.

Dreamweaver

When creating a new contextual selector, choose the Use CSS Selector option in the New Style window, and then type the style name in the Selector field. For example, if you want to create a style for all `p` tags that appear within the context of HTML formatted with a sidebar class style, type `.sidebar p` in the field. Click on the OK button and continue to create your style using Dreamweaver's standard method.

GoLive

Creating a contextual selector in GoLive is even easier: in the Style Sheet toolbar, click on any of the three Style buttons—

Tag, Class, or ID. In the Basics tab of the CSS Selector Inspector, type the name of the contextual selector: for example, `.sidebar p` to create a style for every `p` tag in the sidebar class.

Unfortunately, although GoLive does let you create contextual selectors, it can't *display* contextual-selector styles—you'll need to preview your Web page in a CSS-compliant browser to see how they look. In addition, GoLive treats any contextual selector that begins with a class name—such as `.sidebar p`—as a class style. The contextual selector will appear under the Style tab of the Text Inspector, and GoLive even lets you apply it as you would any other class. However, applying it in this way is incorrect, and although GoLive will display the style properties, CSS-compliant browsers won't.

Mac OS X Secrets

Maybe you don't work on top-secret documents, run a Web site, or write clandestine love letters on your Mac OS X machine. Still, if it's on a network or continuously logged on to the Internet, you should be concerned about security. Always-on broadband connections leave your Mac vulnerable to attack. It's up to you to see that you don't become a victim of criminals—or of plain old mistakes.

Worst-Case Scenarios

What can happen if you don't take our security recommendations to heart? Determined intruders can not only read and destroy your data, but also damage your operating system by changing settings or deleting or adding files. They can even steal your identity—which they can use in gaining access to other computers, sometimes leaving behind harmful programs that will cause problems later.

Although the flexibility of OS X's Unix foundation means that miscreants can more easily mess with your Mac, Apple has done a lot to protect your system—and you can do much more, short of pulling the network plug altogether. Here's how.

DON'T Create Unnecessary Administrator Accounts

Mac OS X provides two kinds of accounts: administrator accounts and user accounts. An administrator can change settings, install software, and open accounts for other users. Administrators also have access to much of the Mac's hidden Unix folder structure.

Users, on the other hand, can see and use only folders within their Home directory or other users' Public folders. They can run applications, but they can't modify system preferences. Administrators can safely give user accounts limited access to an OS X machine.

If, like most Macs, yours has only one primary user, you can protect yourself by not creating extra accounts, especially administrator accounts. Anyone who gets hold of the administrative-account password can change sys-



tem preferences or install applications; you may want to log in routinely as a user, entering the administrative password only when you need to make a change.

DO Use Sudo

Most attacks on Unix computers happen when an unauthorized person gains *root access* to the machine. The Unix root account is all-powerful; with it, someone can completely control the Mac from a remote location, modify or delete important files, enable network services, and destroy

system components. Apple has disabled the root account in Mac OS X, and although you can activate it, there's no reason to, even if you need access to Unix applications.

By using the `sudo` command instead, experienced users can act as root without fear of compromising the Mac's security or doing any serious damage (see *Mac OS X Secrets*, October 2001). And with root access unavailable, intruders have one fewer way to enter your system.

DON'T Be Careless with Network Services

An easy way to protect your Mac is to give outside users only minimal access to it. OS X includes support for file sharing; remote access via the command line using SSH (Secure Shell); Web sharing; and FTP (File Transfer Protocol). You can also add third-party network applications such as Timbuktu, and access to FileMaker Pro databases. But don't enable services that you don't need.

When you install OS X, most networking services that allow others to connect to your Mac are turned off

(though your Mac will be ready for you to log on to other networks if you used the Setup Assistant during installation).

Find out which incoming network services are deactivated. Open the Sharing application within System Preferences. Here you'll find the doorways to most methods of network access to your Mac; activating any one of them provides a means for intruders to access your computer. Use only those that you know you need.

DO Use File

Sharing—Carefully

File sharing is safer than other networking applications. You can grant access to only the directories you want to share, keeping file-sharing users out of your machine's sensitive system directories. In addition, file-sharing passwords are encrypted, so they're less likely to be intercepted by a network *sniffer*—a program or device that captures network data as it travels to its destination.

You can add further protections by setting privileges for individual folders. To do this, select the folder in the Finder, choose Show Info from the File menu, and then select Privileges. Provide the fewest privileges you can get along with. For example, if you don't need to share your files, you might deny access to the Public folder in your Home directory.

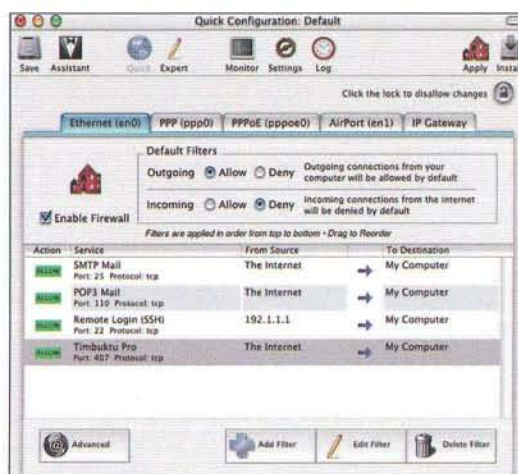
DON'T Enable Remote Login and FTP Access

The riskiest options in the security spectrum are Remote Login and FTP access. Remote Login lets a user connect to your Mac remotely using a terminal emulator (see *Mac OS X Secrets*, September 2001). Though Mac OS 10.0.1 and later replace the very insecure Telnet with the safer SSH, you should probably leave Remote Login turned off. If you must enable it, be sure you've updated to the latest version of Mac OS X.

Mac OS X 10.1's enhanced support for file sharing between Macs and PCs makes using FTP unnecessary. It's also risky, because FTP passwords are not encrypted as they traverse a network. If you must allow FTP access, protect the administrator password by giving users with administrator accounts different passwords.

DO Use Web Sharing

Mac OS X Web sharing is actually a version of Apache Web server (found on many Unix systems). By activating Web sharing (in the Sharing panel), you launch Apache. The Sites folder in the directory of each user on your Mac then becomes publicly accessible—along



Build That Wall BrickHouse lets you set your Mac's access controls individually for network services such as POP mail and Timbuktu. You can even grant access only to specific IP addresses, so only recognized computers can connect.

with any files that are contained within that folder.

Because it doesn't expose the rest of your Mac, Web sharing is fairly secure, and there are no passwords or command-line entry methods to protect. The key to secure Web sharing is placing *only* files meant to be shared into Sites folders. If a user doesn't need to share files via the Web, delete that user's Sites folder or use the Privileges settings to make the folder unavailable.

DO Use a Firewall

If you plan to allow network access to your Mac, you should consider taking some addi-

tional precautions. Software firewalls can track and repel unwanted visitors, and you can set them to allow access only from approved IP addresses or to block port scans, pinging, and other tactics hackers use to size up your Mac's vulnerability.

You can also use firewall software to block some or all of the communications channels, called *ports*, that network services such as Web sharing use to connect to your Mac. If you blocked port 80 using a firewall, for example, a visitor wouldn't be able to get to your Web site.

Some tools, including Brian Hill's shareware BrickHouse (\$25; http://personalpages.tds.net/~brian_hill) and Pliris's Firewalk X (\$12; www.pliris-soft.com), provide a graphical interface for ipfw, OS X's built-in Unix-based firewall. You can also assess your security risk by using Open Door Networks' security-auditing application Who's There Firewall Advisor (\$49; 541/488-4127, www.opendoor.com).

Stay Safe

Despite the security challenges posed by its Unix foundation, Mac OS X has built-in protection that should help you in your efforts to keep your Mac safe. With a combination of common sense and judicious limits on incoming Internet access, you can minimize your Mac's exposure to potential danger and lessen the likelihood of security breaches. **m**

SHELLY BRISBIN is freelance writer based in Austin, Texas. She is a coauthor of *Mac OS X for Dummies* (Hungry Minds, 2001).

More Info: www.macworld.com

For additional Mac OS X security resources, visit Macworld.com and type *OSXSecrets* in the Search box.

LINK

Mac 911

As my newborn daughter gazes up at me from her monkey-and-tiger-themed bassinet, her eyes are filled with questions: “What will I become? What kind of world awaits me? When I get my new iMac, Daddy, how should I maintain it; how can I open Mac OS 9.1 documents in Mac OS X; how can I create a bootable start-up disc; and how can I opt out of DoubleClick ads?”

Maintaining Your Mac

Q. How often should I perform maintenance on my hard drive, and what kind of maintenance should I perform?

TOM KISANUKI
Honolulu, Hawaii

A. If you were to ask ten Mac troubleshooting gurus for an opinion on this subject, you would probably get eleven answers. For example, there are those who religiously follow Apple’s advice to rebuild the desktop file once a month. Others rattle around under the hood only when a Mac refuses to boot. I fall somewhere in between those extremes.

When it comes to a relatively harmless maintenance procedure such as rebuilding the desktop (holding down the \mathbb{H} and option keys at start-up), I wait until my Mac is acting up. An obvious sign that the desktop needs rebuilding is when generic icons appear in place of their colorful counterparts. But there are also less-obvious indications of trouble. For example, if my Mac seems sluggish, I’ll run Micromat’s free TechTool Lite (800/829-6227, www.micromat.com) to rebuild the desktop from scratch. Zapping the PRAM—resetting the Mac’s parameter RAM by holding down \mathbb{H} -option-P-R at start-up—I leave for more serious situations (like when a Mac refuses to boot).

When it comes to more-intrusive maintenance procedures—running diagnostic and repair utilities such as Alsoft’s DiskWarrior (\$70; 281/353-4090, www.alfsoft.com), Micromat’s TechTool Pro (\$98) and Symantec’s Norton Utilities (\$100; 408/517-8000, www.symantec.com)—I fall into the “If it ain’t



broke, don’t fix it” camp. These are useful tools, but they have the potential to leave your Mac in a more fragile state than it was in before you enlisted their help. I therefore use these utilities only when my Macintosh really seems to need them—when it routinely crashes for no apparent reason or a volume refuses to mount.

Underlying my somewhat lackadaisical attitude toward preventive maintenance is the sense of well-being that comes with having an up-to-date backup of all my important data. If you don’t have the same sense of security, you should glom on to it as soon as possible by implementing a backup strategy today. (For help with this process, see “Save Your Data,” September 2001.)

Going Native

Q. I’m having trouble getting some of my files to open in OS X applications. For instance, when I double-click on a file that should be viewable in OS X programs such as TextEdit and Preview, the Classic environment launches and the file opens in something like SimpleText. How can I force these files to open in a native OS X application?

ROBERT SINCLAIR
Chanute, Kansas

A. This is frustrating, and it’s something I hope Apple will address in a future update of OS X. Although OS X allows you to designate a particular application to open a particular document type (you do so in the Show Application

FELIX SOCKWELL

portion of the Get Info window), the method it provides does not work with SimpleText documents. If SimpleText was used to create a file, by gum, then OS X will launch the Classic environment (if it's not already running), where it can open the document in SimpleText.

Thankfully, this conundrum has some fairly simple workarounds. If you have the Developer Tools CD that ships with OS X, install it. Included in the installation is a Carbonized version of SimpleText. When you have this version of the application installed and you double-click on a SimpleText document, the new version of SimpleText launches without booting up the Classic environment. Unfortunately, this native version of SimpleText is not available for download from Apple's Web site.)

I drag and drop documents not created by SimpleText to Wipe Creator, a free AppleScript droplet from Scotland Software (www.scotlandsoftware.com) that strips the creator code from any document dropped on it. Removing this code allows OS X to open files in OS X-native applications. For example, if you drop a JPEG file on Wipe Creator, that file will open in OS X's Preview rather than in the non-OS X application that created it.

Creation Theory

Q. How do I create a bootable start-up CD, and what should I put on it?

JOAN TAFT

New York, New York

A. Unless, like me, you're sometimes heedless about where you leave those items most precious to you, you already have a start-up disc of sorts—the system software CD that came with your Mac. But it doesn't include all the tools you need to boot your Mac *and* bring it back from the dead. You can create a CD that will do both.

First, you'll require software with which to create a bootable CD. I regret to say that Apple's Disc Burner does not fill the bill—it can't create bootable discs.

If you've bought a third-party CD-RW drive, though, you've probably got the best tool for the job—Roxio's Toast. If you don't have a copy of Toast, you can buy Toast Titanium for \$100 (866/280-7694, www.roxio.com). The version of Toast that ships with most third-party CD-RW drives doesn't have as many features as Toast Titanium, but it can create bootable CDs. Here is how I'd do the job:

Launch Apple's Disk Copy (in Mac OS 9.1, it's in the Utilities folder inside the Applications folder), and select Create New Image from the Image menu. In the

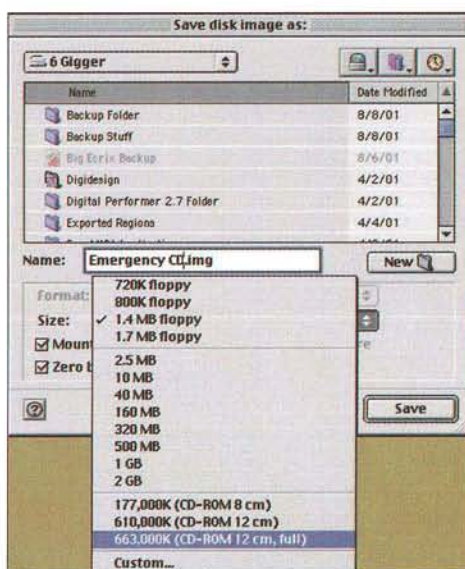


Image Is Everything To create a bootable start-up CD, you must first make a disk image with Disk Copy.

resulting window, give the disk image a descriptive name—for example, "Emergency." Select 663,000K (CD-ROM 12cm, Full) from the Size pop-up menu, make sure the Mount Image option is selected, and click on Save (see "Image Is Everything").

Insert your system-software installation CD; then locate and launch the Mac OS Install application. Select the disk image you just created (in our example, the Emergency disk image) as the installation's destination. You can install a full system, or you can click on the installer's Customize button if you want to install a slimmed-down System Folder—just the Mac OS 9.1 option, for example. After the installation is complete, open

Startup Items inside the Emergency image's System Folder. Remove the Mac OS Setup Assistant alias (so you won't be asked to configure the system when you boot from this CD).

Now that you've created an image of a bootable CD, it's time to put something worthwhile on it. To me, that means diagnostic and repair utilities. If you're installing Alsoft's Disk Warrior, launch the installer and select the Emergency image as your destination. Once the program has installed, launch the copy of Disk Warrior on Emergency; then enter your name and serial number. If you don't do this, Disk Warrior won't run from your CD.

The procedure is much the same for Norton Utilities. However, after installation, you may want to remove a couple of unnecessary items from the Emergency image. *continues*

Tip of the Month

In Mac OS 9.1, you can **hide a background application** with a single keystroke. Here's how:

Launch the Keyboard control panel and click on the Function Keys button. Open your Mac's System Folder, then the Apple Menu Items folder, and then the Speakable Items folder. *[Editor's note: If the Speakable Items folder isn't present, you must custom-install the English Speech Recognition software from the Mac OS 9.1 installation disc.]* Drag the Hide All Applications AppleScript to an empty function-key slot, and click on OK. Now when you press that function key, the AppleScript will hide all open applications and return you to the Finder.

GREGORY MEACH
Canaan, Connecticut

Unsolicited Advice

My greatest desire is that spammers—the soulless scoundrels who fill your e-mailbox with unsolicited crud—some day meet an everlastingly fiery end. But while we wait for divine retribution, you can do something about their effluvia. Namely, use your e-mail client's filtering feature to **prescan e-mail** for certain key words in the subject heading. You can direct your client to channel these messages directly into the Deleted Items folder (though you may want to scan the contents of this folder from time to time, in case a correspondent accidentally used one of the forbidden words in the subject heading of a message that you want to receive).

I'd suggest that you add the following words and phrases to your junk-mail filter list:

\$\$\$
ADV
advertising
anything anyone
barely legal
casino
credit card
email address list
extra cash
financial freedom
find out anything
fire your boss
free vacation
gambling
I love you and I don't want you to die
make money
save money
Viagra
XXX

And, of course, any message whose body text includes "Richard Simmons" should be deleted without fail (unless, of course, you *are* Richard Simmons).

Also, for those of you confounded by the AppleScript (published in September 2001's *Mac 911* column) that lets you place double arrows on scroll bars, a bit more information may help. The "double angle brackets" that appear in the tip are actually punctuation marks known to discerning grammarians as *guillemets* (and to hoi polloi as French quotation marks). To create the guillemets (« and ») in the script below, type option-\\ (forward slash) and shift-option-\\, respectively, not the angle bracket characters.

```
tell application "Appearance"
  set scroll bar arrow style to «constant
****dubl»
  quit
end tell
```

I've never found Disk Light to be very useful, so I drag it out of the Control Panels folder. Likewise, because you can't update the version of Norton Utilities on the CD (it's read-only, after all), I also toss out Live Update.

TechTool Pro 3 is a little trickier. You must first install it on your Mac's hard drive, along with any available updates. Then run the copy on your hard drive and select Preferences in the Edit menu. In the window that appears, deselect the Auto-Update Protection Files option (because your Emergency CD will be read-only, TechTool can't update its protection files). Quit TechTool.

Install a copy of TechTool Pro 3 and its updates on your Emergency image. Open the Preferences folder on your Mac and copy the TechTool Pro Prefs file to the Preference folder of the System Folder on your Emergency image. This allows the copy of TechTool on the Emergency image to launch properly without trying to update your protection files.

You're finally ready to burn your Emergency disc. Just launch Toast, select the Files & Folders option from the Format menu, and click on the Data button and then on the New CD button. Select all the files in your Emergency image and drag them into Toast's Files & Folders window. Now burn, baby, burn.

DoubleClick Trick

Q. I've read reports that some online marketers track users' Internet browsing in ways I'm not comfortable with. Is there anything I can do to keep them from tracking me?

TURNER ROUSE

Fayetteville, North Carolina

A. Marketing outfits such as DoubleClick have indeed engaged in practices that make many people uncomfortable—for example, using browser cookies to gather personally identifiable data and employing that information to target Web advertisements more specifically. The legality of such actions is under scrutiny, but rather than wait for the court's decision, why not just tell DoubleClick to butt out of your business? You can do so by traveling to this Web site: www.doubleclick.net:80/us/corporate/privacy/privacy/ad-cookie/default.asp?asp_object_1=& and, with cookies enabled, clicking on the Opt-Out button. This places a cookie in your browser that repels any additional cookies the DoubleClick system might want to plant. ■

Contributing Editor CHRISTOPHER BREEN is Big Daddy of the Macworld e-newsletter's Daily Tips (www.macworld.com/newsletters).

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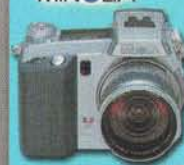
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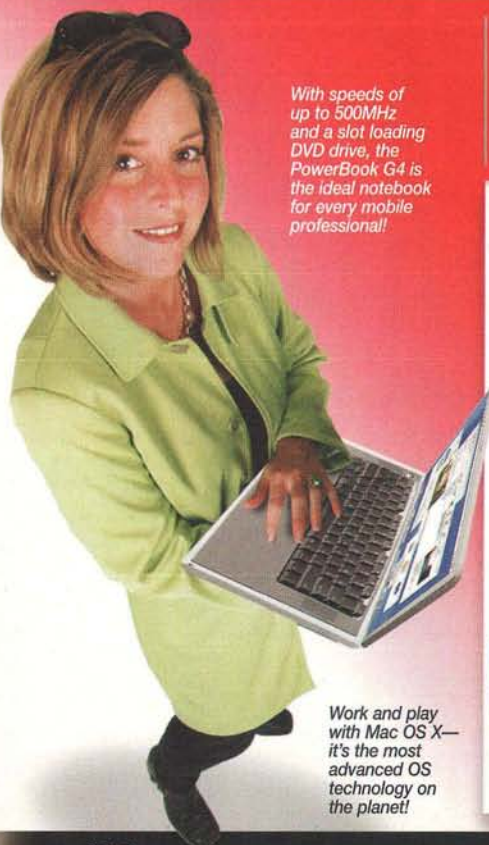
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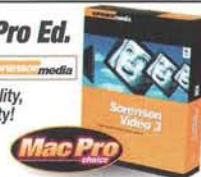
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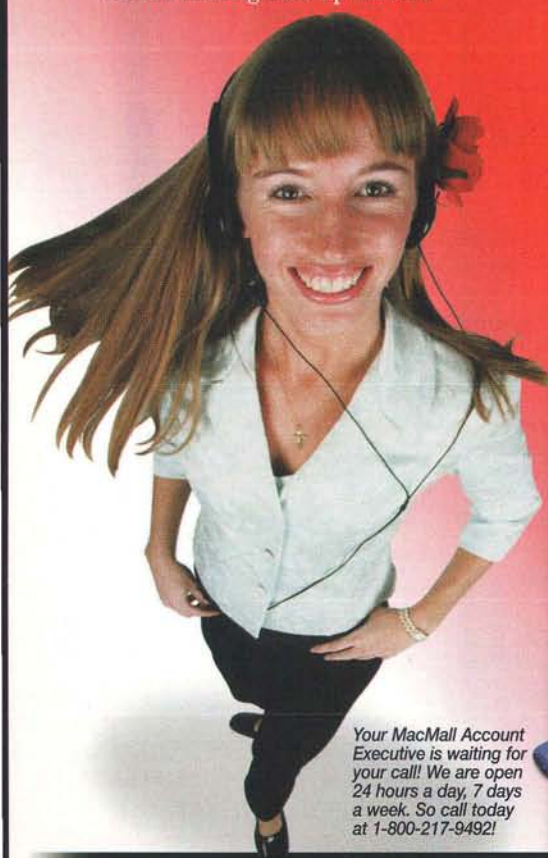
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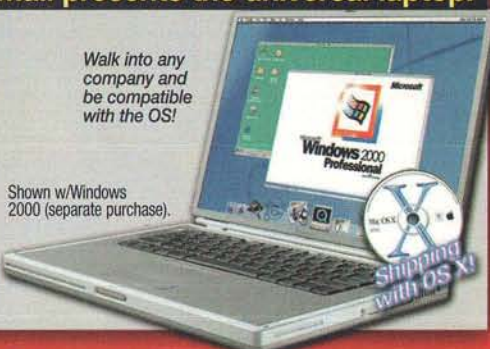
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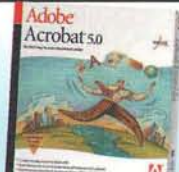
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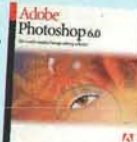
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On-chip Cache	256K	256K	256K
Optical Drive	CD	DVD	CD-RW/DVD
FireWire/USB	1/2	1/2	1/2
AirPort Ready	Yes	Yes	Yes
Ethernet	10/100BT	10/100BT	10/100BT
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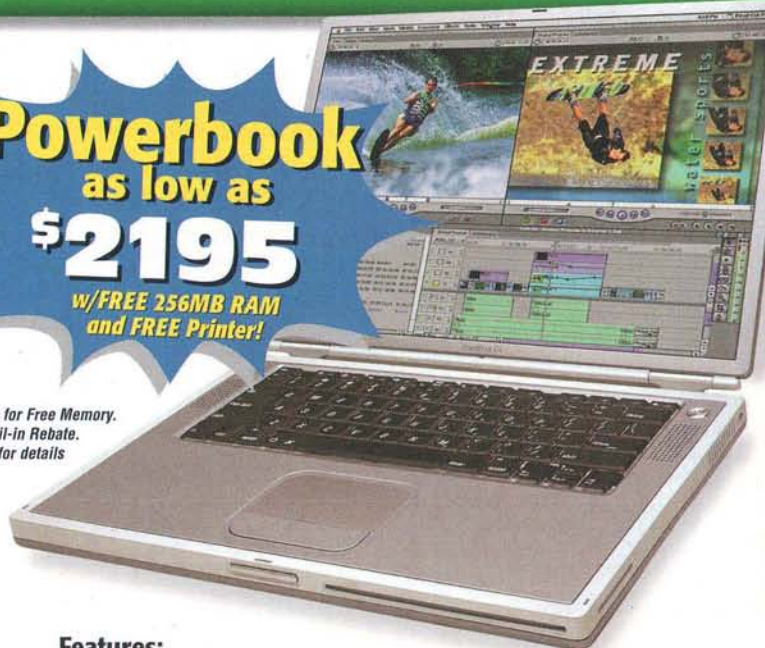
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512MB DIMM	\$239	\$63 ⁷⁵	\$175 ²⁵	M905 2484



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PowerMac G3 Series Beige

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iMac 500/600/700
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256MB	\$89	\$29 ⁸⁵	\$59 ⁰⁵	M905 2366
512MB	\$225	\$63 ⁷⁵	\$161 ²⁵	M905 2367

*Not compatible with all models.



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256MB DIMM	\$119	\$33 ⁷⁵	\$85 ²⁵	M905 2446
*512MB DIMM	\$549	\$325 ⁵⁵	\$223 ⁵⁵	M905 2490

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A102 1998	600Mhz G3	Graphite	256MB	40GB	\$1295	\$32/MO
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- 56k Modem

Part#	Mhz	Optical Drive	Base Ram	HD	Price!	Or as low as
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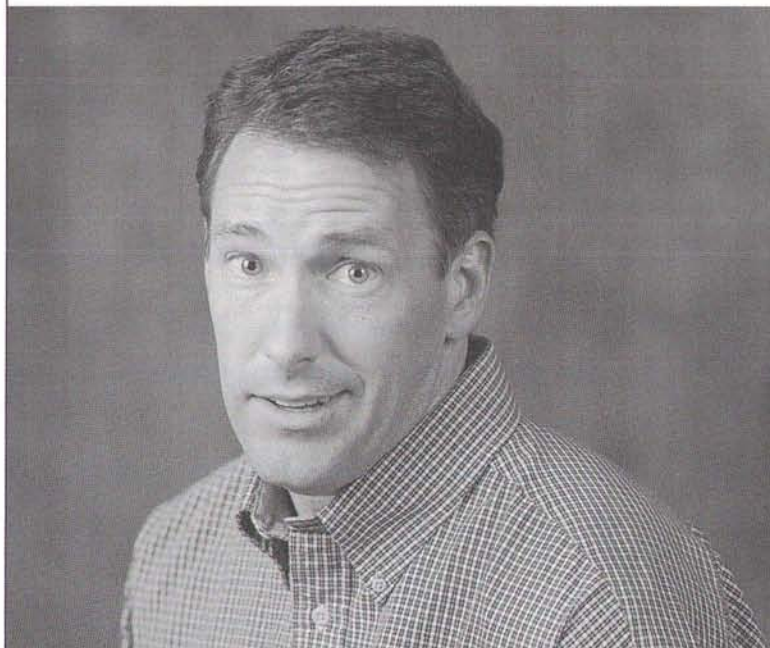
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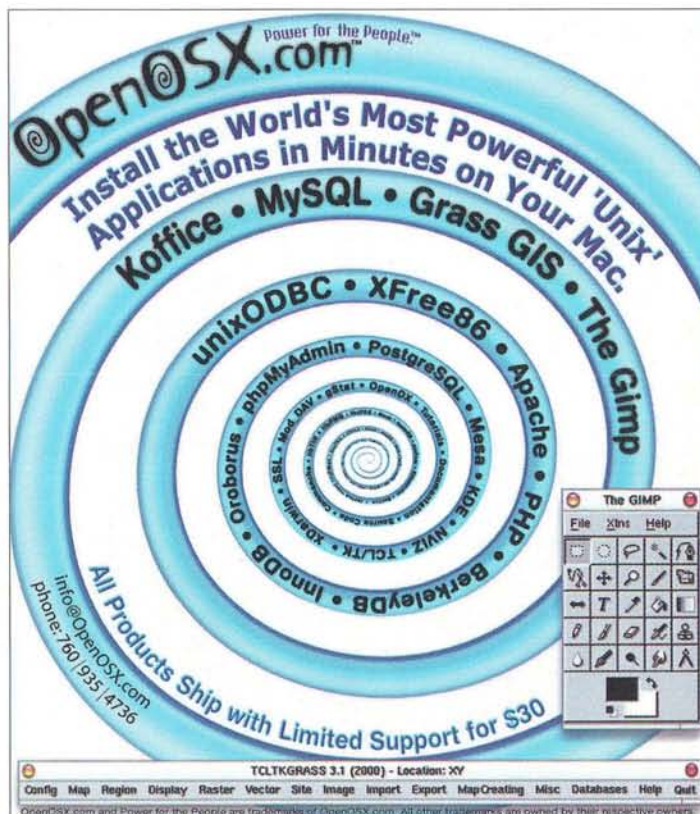
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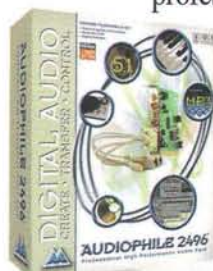
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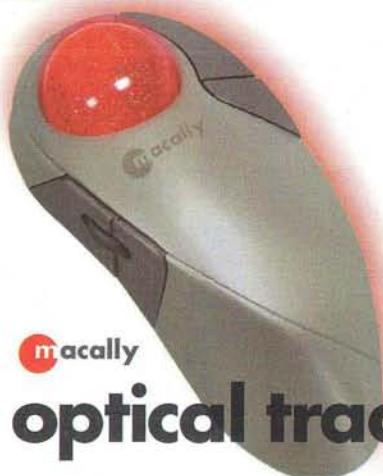


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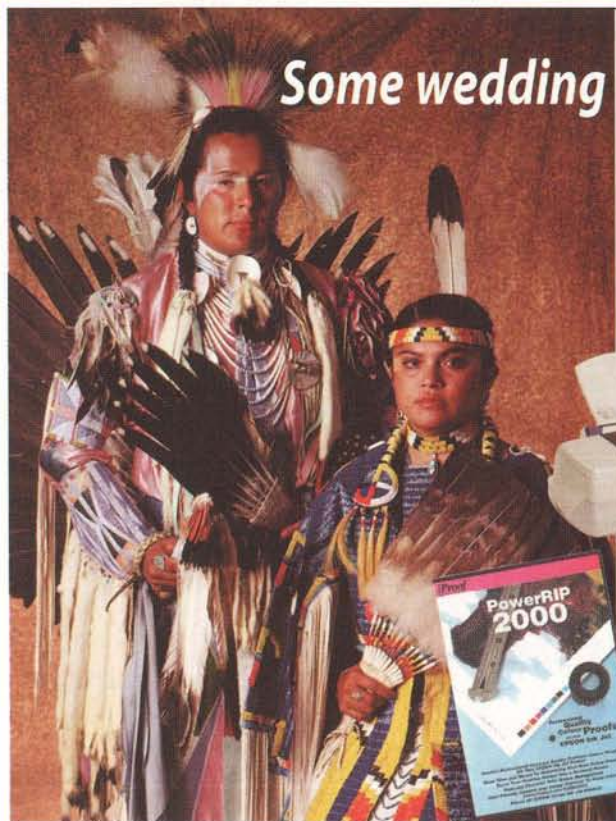


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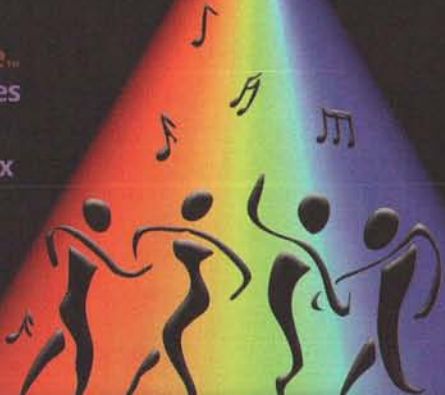
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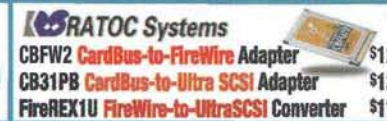
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and e-mail it to Jason,” and turn it into the command “Look for a Word file larger than 20K, last modified yesterday after 5 p.m. If there’s only one, convert it to HTML, and if there’s only one Jason in the address book, e-mail it to him; otherwise, ask me which Jason I mean.” And this is eminently doable. The success with which iListen and ViaVoice can turn voice

into text and the ease with which the Newton OS was able to parse complex commands prove it.

That's All There Is?

I am convinced that untold riches await the first company that makes a voice interface work really well. Did you ever see Mr. Spock operate a mouse? I rest my case. But we present-day humans tend to resist any inter-

face that doesn’t involve our familiar and stagnant collection of elements.

Since 1984, the *capabilities* of personal computers have increased exponentially. But the interface itself hasn’t taken any significant steps forward—it still consists of an on-screen pointer that acts on a collection of menus, windows, and icons. Aqua is a highly valuable and experience-enriching face-lift—but it’s just a face-lift. After 17 years of experience as users and as developers, have we all agreed that we got it perfect the very first time? Or have we simply grown complacent and abandoned the quest for anything better?

The scariest notion is that little by little, Windows and even Linux are starting to catch up to the Mac, at least in terms of the interface. I installed a beta of Windows XP the other day, and my jaw dropped: at last, the GUI *doesn’t* look like someone designed it on an Etch A Sketch. Thank heavens Microsoft stopped putting the year of release into the name. We currently go around spraying “Windows 98 = Mac OS ’90” on highway overpasses, but “Windows 2001 = Mac OS Early ’99” wouldn’t really have the same punch.

But for all its advances, even Windows XP boils down to *click, double-click, drag*. As Mac users, we expect more. We want to *speak, acknowledge, walk away because the Mac can take it from there*. Or we want our screens to resemble the flattened front of a virtual sphere that we can spin to reveal new views of the Internet, the file system, or the user experience.

Changing the interface for change’s sake is dippy. We see the result every time users running Mac OS X want to close a window but hesitate, momentarily unsure if they’re choosing “*stop* using this window” or “I’m done; this window may now go.”

But it’s also true that the only difference between a rut and a grave is their depth. **m**

Columnist ANDY IHNATKO (www.cwob.com) talks to his Mac all the time—but he’s convinced that it’s ignoring him.

ATTENTION

APPLE iMAC DV, iMAC DV SE, AND G4 OWNERS

YOU MAY BE ELIGIBLE FOR SETTLEMENT BENEFITS

TO: Anyone in the United States who bought or received a new iMac DV or iMac DV SE, or a Power Mac G4 system that included a software DVD player using the Mac OS 9.0.3 operating system (or earlier) and a DVD player version 2.1 (or earlier) (“the Class”).

If you purchased one of these computers before May 2000, you are probably eligible for settlement benefits. This does not apply to resellers.

* * *

There is a proposed settlement of a class action lawsuit against **Apple Computer, Inc. involving issues with DVD playback in earlier models of the Apple iMac DV, iMac DV SE, and Power Mac G4 computers**. A Notice explaining how you can receive a free fix for these issues as well as other settlement benefits is available.

To receive a full notice, call toll-free (866) 461-1839.

Free System Software Upgrade for These Earlier Computer Systems. If the settlement becomes final, those eligible for benefits can receive a free CD-ROM upgrade to fix the issues with the computer’s DVD playback quality for the computers that include the earlier operating system (9.0.3 or earlier) and DVD player (version 2.1 or earlier).

To receive your free Upgrade, please register online now at <http://www.rosenthalco.com/appledvdsettlement> or call toll-free (866) 461-1839 to receive your Notice and upgrade card.

Free Technical Support for Installation and Use of Upgrade. Those who receive a System Software Upgrade can also receive free customer service support to fix any technical issues relating to the installation and use of the System Software Upgrade. The support is available for 90 days after the Upgrade is shipped.

Discounts on Selected Merchandise. You may also be able to receive one of the following discounts on any one of the following Apple products:

- (1) **iMovie 2** (Download Version only) for \$19 (retail price of \$49);
- (2) **Appleworks 6** for \$44 (retail price of \$79);
- (3) **Apple Memory Module 64 MB** for \$80 (retail price of \$100);
- (4) **Apple Pro Mouse** for \$44 (retail price of \$59); or
- (5) **Apple Pro Keyboard** for \$44 (retail price of \$59).

If you are a member of the proposed settlement class, you also have the right to **exclude yourself from this settlement, object to this settlement, seek leave to intervene in the lawsuits**, and exercise other important rights. These rights must be exercised by November 12, 2001.

IF I LIVE TO BE 100, I will never stop telling people that—with a few rare exceptions—every Randy Newman song sounds like all other Randy Newman songs, which sound like toilet-paper jingles. Similarly, when it comes to Mac OS X's Aqua interface, I will never tire of asserting that the colors of a traffic signal do not by any stretch of the imagination make a user immediately think of closing, minimizing, and maximizing. Closing a window does not stop anything, and maximizing one doesn't make anything go—and what's so cautious about putting a window into the Dock?

I do like Aqua. It prettified the Mac, and for the most part, all that on-screen shadowing, highlighting, melting, and throbbing make for an interface that's visually easier to navigate. It's a swell face-lift for a familiar look. But what if Apple went for more than a face-lift?

Let me tell you about an idea I recently had. Like most of my ideas, it came to me while I was napping on my sofa and trying to come up with a way to avoid actual work. While I napped and evaded, my G4 Cube called out, telling me I had new mail.

Big deal. It happens all the time, now that my Internet connection is on 24-7. This time, though—possibly owing to my having had three sodas in the space of 40 minutes—my eyes were open: *Wait, this just might be incredibly cool!* I had access to the G4 without physical proximity or any sort of device or accessory. I got information from it without having to turn my head, even.

Why don't we normally think of speech as a user interface? Because it involves no pointing devices or bouncing icons? Is that any excuse?

Audio Interface

That's when my idea hit—and as usual, it involved going to Radio Shack and spending a lot of money.

ANDY IHNATKO

VOICE of REASON

*After 17 Years,
It's Time to
End the
Double-Click Drag*

I came home with about six omnidirectional microphones, a line-level amp, and a cheap mixer. Three or four missed deadlines later, I had wired my entire office for sound. Through discreetly placed microphones, my G4 could receive voice input from anywhere in my big office-cum-den.

Now when my computer says, "You have new mail," I can reply, "Is it important?" And unless Mailsmith sees a message from someone I've designated Important, the G4 advises me that I needn't stir from my sofa and my P. G. Wodehouse.

I enjoyed *that* so much that I expanded the system in both coverage and capability. I have another six mikes scattered across the house (in the kitchen, near my front door, and in the TV room) and a couple dozen new scripts that do things way more interesting than fool with my mail.

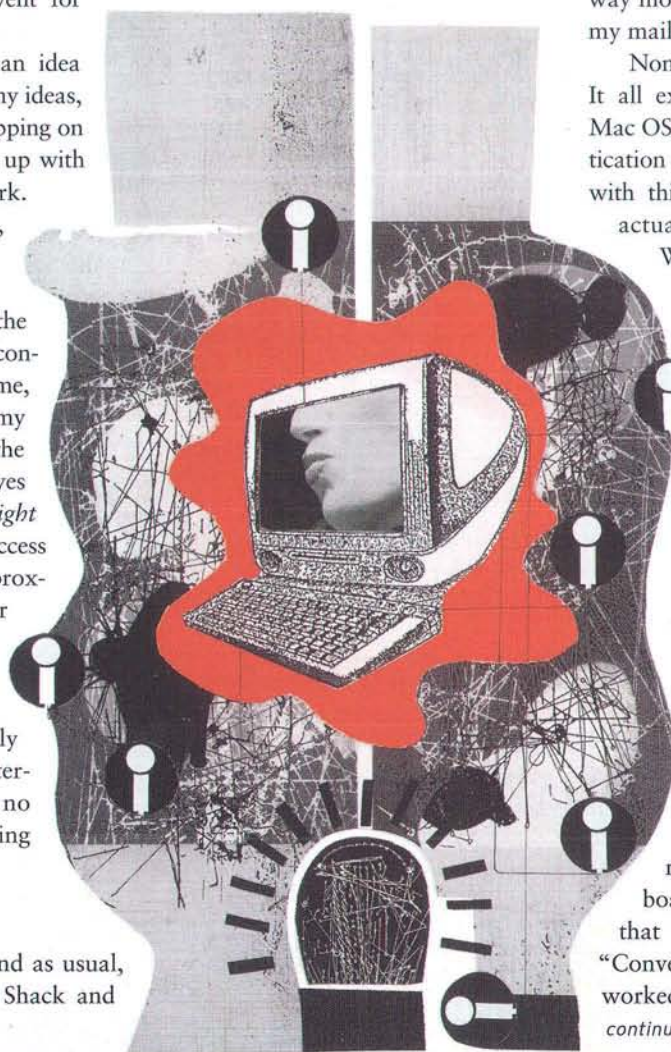
None of this is rocket science. It all exploits standard features of Mac OS 9. In fact, the lack of sophistication is my sole disappointment with this system. My Mac doesn't actually *parse* these sentences.

When I awaken and groggily ask the PowerBook on my nightstand to "get me the morning news," I'm really firing up an AppleScript with that exact title, which opens all of the URLs within a Morning News folder.

Speech is the most jaw-droppingly obvious unexploited resource in the user-interface world. IBM and MacSpeech have made great leaps with their speech products in the past year, but jeez, these products are still not much more than keyboard replacements. I've got a key-

board. What I want is a utility that can take a sentence like "Convert that big manuscript I worked on last night to HTML,"

continues on page 131





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